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Publication

FOREIGN OWNERSHIP AND THE MINING INDUSTRY

Prepared as part of a study on
**FOREIGN OWNERSHIP:
CORPORATE BEHAVIOUR AND PUBLIC ATTITUDES**

for the
SELECT COMMITTEE ON ECONOMIC AND CULTURAL NATIONALISM
of the
**LEGISLATIVE ASSEMBLY
PROVINCE OF ONTARIO**



by
KATES, PEAT, MARWICK & CO.
OCTOBER, 1973

PUBLISHED BY
THE SELECT COMMITTEE ON ECONOMIC
AND CULTURAL NATIONALISM
OF THE LEGISLATIVE ASSEMBLY OF ONTARIO

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The views expressed in this report are those of the
Kates, Peat, Marwick & Company Study Team, and are not necessarily
those of the Select Committee.

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October 5, 1973

Mr. Russell D. Rowe, MPP
Chairman
Select Committee on Economic and
Cultural Nationalism
Room 104
Parliament Building
Queen's Park
Toronto, Ontario

Dear Mr. Rowe:

This report, Foreign Ownership in the Mining Industry, is submitted to you as part of the overall study of Foreign Ownership: Corporate Behaviour and Public Attitudes which we are conducting on behalf of the Committee. Mining is the second of six industries to be reported on by our firm.

We would like to express our appreciation to the mining firms and officials who cooperated in our research effort, and to the staff of the Select Committee and Select Committee members who assisted in reviewing earlier drafts of the report.

In accordance with our terms of reference this report provides factual and attitude information on the mining industry and its people, relative to the various issues of foreign ownership and control. Policy recommendations are not made since the Committee will be drawing its own conclusions based on this and other information before it.

We have attempted to make the report as complete and objective as possible within the context of available time and resources, and we trust that it will assist the Committee in its deliberations.

Yours truly

KATES, PEAT, MARWICK & CO.

Kates, Peat, Marwick & Co.

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I - BACKGROUND, METHODOLOGY AND APPROACH

The Ontario Select Committee on Economic and Cultural Nationalism retained the consulting firm of Kates, Peat, Marwick & Co. to analyse selected firms and industries within the Province of Ontario. Specifically, the Select Committee expressed interest in the behavioural patterns of corporations, Canadian- and foreign-controlled, based upon factual material on their activities and on the attitudes of management and employees, relative to the phenomenon of direct foreign investment within the Province of Ontario.

Studies have been undertaken which attempt to assess the impact of non-Canadian-controlled corporations upon the economic and social structure of Canada.¹ This study differs from most previous research projects in that it includes at least two distinctive factors:

- analysis of non-manufacturing, as well as manufacturing industries
- in-depth interviews with industry and company specific leaders.

The mining sector, and in particular metals, has been chosen for analysis as one of the resource-based industries because of its significant economic importance, its reliance on non-renewable natural resources, and because of the argument that Canada is too reliant upon its natural resource endowment as a source of jobs and income.

1. A.E. Safarian, The Performance of Foreign-Owned Firms in Canada; National Planning Association and Private Planning Association of Canada, Canada-U.S. Committee; 1969.

EXHIBIT 1CANADIAN PRODUCTION OF LEADING MINERALS

	Millions of Dollars					
	1951	1956	1961	1966	1971	1972
Petroleum	116.7	406.6	512.2	789.3	1,351.0	1,548.4
Nickel	151.3	222.2	351.3	377.5	789.2	809.9
Copper	149.0	293.0	255.2	453.5	754.5	697.5
Iron Ore	31.1	160.4	188.0	431.7	559.8	563.2
Zinc	135.8	125.4	104.7	291.2	410.7	504.9
Natural Gas	7.2	16.8	72.0	178.2	318.5	380.6
Asbestos	81.6	99.9	129.0	163.7	210.4	245.4
Cement	40.4	75.2	103.9	156.3	194.2	219.7
Natural Gas Byproducts	-	-	19.5	102.5	202.5	210.3
Lead	58.2	58.6	47.1	89.8	109.8	155.9
Sub-Total	771.3	1,458.1	1,782.9	3,033.7	4,909.6	5,335.8
All Others	474.2	626.8	820.0	946.8	1,006.3	1,051.6
TOTAL	1,245.5	2,084.9	2,602.9	3,980.5	5,915.9	6,387.4

Source: Canadian Mining Journal, a National Business
Publication, February, 1973.

MINING INDUSTRY
BACKGROUND: CANADA

Mining in Canada is a significant generator of income and employment. In 1972, Canadian value of mineral production was \$6,387.4 million. Historical figures for selected years 1951-1971 are presented in Exhibit 1, opposite. While petroleum and natural gas have experienced the largest gain, the growth in metals production has also been substantial.

While output has increased over the period 1951-1971, direct employment in the mining sector has remained relatively constant at about 130,000 employees. This is indicative of a steady increase in productivity in the Canadian mining industry.² Dawson attributes this increasing productivity to two factors:

- substantial amounts of capital investment
- a marked upgrading of the training and skills of the employees in the industry.

One result of this high productivity is that employees in the mining industry are among the highest paid workers in Canada. The following table presents comparative wage rates by industry sector for the years 1968-1970:

2. J. Dawson, Productivity Change in Canadian Mining Industries, Economic Council of Canada, Ottawa, 1971.

Industry	Average Weekly Wages and Salaries			
	1968	1969	1970	1971
Construction	\$137.59	\$150.68	\$167.15	\$187.76
<u>Mining</u>	139.16	148.93	164.70	177.19
Forestry	122.04	133.60	137.60	155.44
Transportation, Communication and Other Utilities	122.70	131.03	142.35	154.00
Manufacturing	114.42	122.93	132.75	143.82
Finance, Insurance and Real Estate	106.21	113.83	120.52	129.50
Trade	86.91	93.80	100.50	108.41
Service	78.99	84.23	90.65	98.34
Industrial Composite	109.88	117.64	126.82	137.52

SOURCE:

In addition, it is estimated that each mining job supports "at least two employees engaged in the service support and ancillary trade industries along with another two in the social support and manufacturing industries".³

Also, the impact of the resource industries upon the total Canadian economy can be significant.

"Contrary to popular opinion, the total national employment opportunities associated with increased production in the resource industries compare favourably with other industries. ...As a specific illustration, the effect on labour utilization of increasing the final demand for mineral products might be compared with an equivalent demand for motor vehicles. Conventional wisdom would tend

3. An address by the Honourable Donald Macdonald, Ministry of Energy, Mines and Resources, to the Canadian Institute of Mining and Metallurgy, Toronto, December 15, 1972. However, knowledgeable observers of the mining industry have questioned whether the employment multiplier effect is as high as the figure postulated.

to identify the total impact on employment with the low labour intensity of one group and the high labour intensity of the other. Using Input-Output analysis it can be seen that the impact on wages and salaries (including income of unincorporated businesses) of a \$1 million increase in expenditure in final demand would be \$713,000 for the mineral products and \$802,000 for the motor vehicles. There is still a significant difference, but not as great as would be imagined from a study of direct employment in the two industrial areas. The impact table also shows that the contribution to GDP would be greater in the case of mineral products, due primarily to lower imports and higher corporate profits in the mineral industry." ⁴

The Canadian mining industry is also a substantial exporter. Exhibit 2, overleaf, indicates production, exports, exports as a percentage of production and Canadian production as a percentage of world production for selected minerals. These figures assume greater significance when a comparison is made of Canadian production with total world production. On this basis:

- Canada is the world's leading producer of zinc, asbestos, nickel and silver
- Canada is the fifth largest producer of copper
- Canada is the sixth largest producer of iron ore.

Thus, Canada is a substantial mining nation which supplies a large portion of the world's requirements for a number of mineral products.

4. Science Expenditures and the Contributions of the Resource Industries to the Canadian Economy, W. D. Bennett, Science Council of Canada, Special Study No. 27, May, 1973, P. 23 and P. 24.

EXHIBIT 2

CANADIAN EXPORTS OF SELECTED MINERALS IN RELATION TO PRODUCTION
AND CANADIAN PRODUCTION AS A PERCENTAGE OF WORLD PRODUCTION (1971)*

Mineral	Unit of Measure	Production	Exports	Exports as a % of Production	Canadian Pro- duction as a % of World Production
Copper	Short Tons	714,507	537,221	75.2	10.4
Iron Ore	Long Tons	43,281,000	18,703,009	43.2	5.6
Nickel	Short Tons	294,947	280,113	95.0	46.8
Zinc	Short Tons	1,227,375	1,178,506	96.0	23.9
Asbestos	Short Tons	1,641,000	1,555,563	94.8	43.4
Elemental Sulphur	Short Tons	3,065,000	2,647,893	86.4	Not Available
Lead	Short Tons	406,685	336,202	82.7	11.5
Silver	Troy Oz.	44,938,000	43,384,345	96.5	14.7

SOURCE: The Mining Association of Canada, Toronto, 1972; and Canadian Mining Journal,
A National Business Publication, February, 1973.

* Production and export of raw minerals and smelted and refined products

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In the past, the exporting of Canada's mineral wealth was considered desirable because it earned foreign exchange for the country, permitting the purchase of goods and services from abroad. However, the desirability of exporting minerals, particularly in unprocessed form, has come under question. Some analysts have suggested that the value added to Canada's mineral wealth should be increased, through additional refining, before the commodities are exported. Others have taken the view that Canada should attempt to discourage mineral exports, even at the refined level, and concentrate upon developing secondary manufacturing industries.

This latter group contends that mineral exports put upward pressure on the value of Canadian currency on foreign exchange markets, thereby making more difficult exports of manufactured products. This hypothesis is based on the premise that other countries are more prepared to buy our primary products than our manufactured products, for if they were not, then the high exchange rate would be more of a barrier to mineral exports than the export of manufactured commodities.⁵

Nonetheless, it is generally agreed that the extent of further processing of Canada's mineral wealth should be maximized to the greatest degree feasible. With respect to further processing, almost all of Canadian nickel is smelted in Canada, and over 60 per cent is refined here. Approximately 70 per cent of Canada's copper output is smelted

5. Such reasoning would probably be conducted under the "infant industry" argument which states that while our industry may be inefficient at the present time, if it is protected it will develop, eventually, into a world competitive industry.

EXHIBIT 3

ABSOLUTE AND PERCENT CONTRIBUTION TO THE
CANADIAN DOLLAR VALUE OF MINERAL PRODUCTION

Province	1951		1961		1966		1971	
	\$ Millions	%	\$ Millions	%	\$ Millions	%	\$ Millions	%
Ontario	444	37.5	952	36.6	959	24.1	1,561	26.4
Alberta	168	13.5	476	18.3	847	21.3	1,650	27.9
Quebec	255	20.5	457	17.6	764	19.2	768	13.0
British Columbia	175	14.1	189	7.3	330	8.3	532	9.0
Saskatchewan	51	4.1	218	8.4	350	8.8	384	6.5
Newfoundland	32	2.6	93	3.6	242	6.1	337	5.7
Manitoba	29	2.4	101	3.9	179	4.5	319	5.4
New Brunswick	9	0.8	18	0.7	91	2.3	106	1.8
Northwest Territories	8	0.7	18	0.7	111	2.8	100	1.7
Yukon Territory	9	0.8	13	0.5	11	0.3	94	1.6
Nova Scotia	59	4.8	62	2.4	87	2.2	59	1.0
Prince Edward Island	-	-	-	-	-	-	-	-

The Canadian Mineral Industry in 1971, Department of Energy, Mines and Resources,
Mineral Bulletin MRL22, Ottawa, 1972.

and refined in the country, and while only 35 per cent of zinc is refined within Canada, the amount refined is expected to increase over the next few years.⁶ Canadian iron ore is either converted into iron and steel within the country or is shipped abroad in unprocessed form. In 1971 43 million long tons of iron ore were shipped in Canada, 77 per cent of which was exported in unprocessed form. In 1972, 38 million long tons were shipped and 74 per cent of this total was exported in unprocessed form.

MINING INDUSTRY BACKGROUND: ONTARIO

The mining industry plays a significant part in the economic life of the Province of Ontario. Exhibit 3, opposite, indicates the absolute and the percentage contribution by each province to Canada's total mineral production.

While the Ontario percentage contribution has declined, this is primarily attributable to the large scale petroleum developments in the Province of Alberta, but Ontario production has been declining, relatively, in other areas as well. In absolute terms, mineral output in the Province of Ontario has risen from \$0.44 billion in 1951 to \$1.56 billion in 1971. However, it is interesting to note that the per capita dollar value of mineral output in Ontario in 1969 was \$172. This compares with an Ontario per capita dollar value of \$3,370 for total manufacturing output in 1969. This is indicative of a diversification of the Ontario economy, which has made the Province less reliant upon its mineral resource endowment.

6. MacDonald, op cit.

EXHIBIT 4ESTIMATED MINERAL PRODUCTION FOR ONTARIO AND CANADA (1972)

<u>COMMODITY</u>	<u>ONTARIO</u>	<u>CANADA</u>
Cobalt	\$ 8,663,000	\$ 10,234,000
Copper	\$291,563,000	\$809,895,000
Gold	\$ 36,873,000	\$ 76,059,000
Iron Ore	\$161,281,000	\$563,150,000
Lead	\$ 3,202,000	\$114,557,000
Nickel	\$513,301,000	\$697,528,000
Silver	\$ 33,588,000	\$ 80,489,000
Zinc	\$156,370,000	\$504,851,000

SOURCE: Statistics Canada

In 1971 there was a total of 53,567 people directly employed in mines, contract diamond drilling, metallurgical works and quarries and pits in the Province of Ontario. Mining accounted for 32,028 jobs out of this total, with the majority located in Northern Ontario.

Exhibit 4, opposite, indicates the estimated value of production for selected mineral products in Ontario and Canada for the year 1972. Ontario accounts for the majority of Canada's output of cobalt and nickel and a substantial proportion of the other minerals with the exception of lead. Ontario produced this output with 16 per cent of the approximately 1,700 mining "establishments" in Canada, as defined by Statistics Canada.

While the mining industry is of importance to the overall economy of the Province, mining has a much stronger impact upon Northern Ontario. In fact, many communities are completely dependent upon the mining industry and the original rationale for the creation of these towns was the presence of an economic ore body.

Over the period 1968-1970 the Province revised legislation which requires 100 per cent processing within Canada of all ores mined within the Province of Ontario. This legislation provided for Cabinet Exemptions. It is apparent that these exemptions have been provided when a company could demonstrate the economic necessity of exporting ore in a form which is less than completely processed. Exhibit 5, overleaf, presents the principal processing requirements of Section 113 of the Ontario Mining Act. These exemptions are for such period of time as

EXHIBIT 5SECTION 113 OF THE MINING ACT, PROVINCE OF ONTARIO

(1) All lands, claims or mining rights patented, leased or otherwise disposed of under this or any other Act or by any authority whatsoever are subject to the condition that all ores or minerals raised or removed therefrom shall be treated and refined in Canada so as to yield refined metal or other product suitable for direct use in the arts without further treatment, in default whereof the Lieutenant Governor in Council may declare the lease, patent or other form of title of such lands, claims or mining rights to be void, and the order in council so declaring shall be registered in the office of the proper master of titles or registry office, as the case may be, or in the case of a licence of occupation, filed in the Minister's office, whereupon such lands, claims or mining rights revert to and become vested in Her Majesty, Her heirs and successors, freed and discharged of any interest or claim of any other person.

(2) For the purposes of subsection 1, the Minister may determine the stage of refinement at which any mineral substance is refined metal or other product suitable for direct use in the arts without further treatment.

(3) The Lieutenant Governor in Council may exempt any lands, claims or mining rights from the operation of this section for such period of time as seems proper.

(4) Where there is any conflict between the provisions of this section and the provisions of any general or special Act, the provisions of this section prevail.

The Mining Act; Revised Statutes of Ontario, 1970; Chapter 274; Published August, 1972 by the Queen's Printer; Toronto, P. 55-56.

seems proper. However, even prior to the enactment of this legislation, there had been a steady increase in the extent of further processing of Ontario ores. Almost all of Ontario's copper is refined within Canada while the further processing of zinc has also increased.

As in the manufacturing sector, the mining industry is dominated by a few larger firms with respect to both output and earnings. We have estimated that there are, approximately, 45 active mining companies operating within the Province of Ontario.

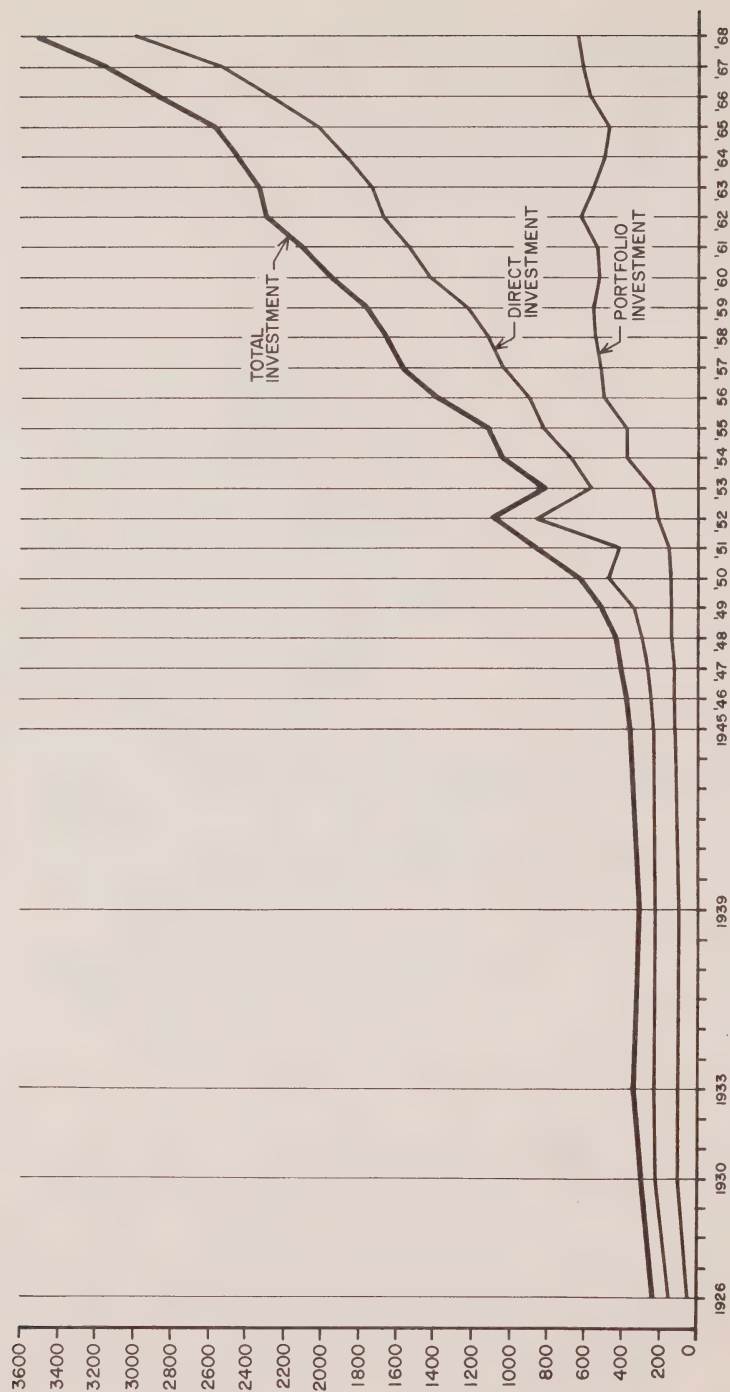
The distribution of revenue for the year 1970 is as follows:

<u>Revenue</u>	<u>Number of Firms</u>	<u>Cumulative Percentage of Revenue</u>
Less than \$10 million	36	.045
Between \$10-\$20 million	2	.060
Between \$20-\$100 million	2	.080
Between \$100-\$200 million	2	.226
Between \$200-\$300 million	1	.346
Between \$300-\$1,000 million	1	.551
Greater than \$1,000 million	1	1.000

The top three firms account for over 77 per cent of Ontario mining revenue for the year 1970. The comment was made a number of times during the course of the study that mining is risky for small firms and that the profitability of many of these small companies is marginal. However, when a rich ore body is found the impact can be substantial upon the firms' revenue and profit. The Ontario figures substantiate that mining can be very profitable for those large firms with highly developed ore bodies. In this regard there are a number

EXHIBIT 6

FOREIGN INVESTMENT IN OTHER MINING AND SMELTING IN CANADA (1926-1968)
(In Millions of Dollars)



Source: Statistics Canada

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of similarities between mining and secondary manufacturing with respect to the "riskiness" of the smaller ventures and the longer-run profit stability for the larger, well managed, more established operations.

The mining industry in Canada and in Ontario has experienced foreign capital investment throughout its history. Exhibit 6, opposite, provides statistics on investment in the Canadian mining industry for the period 1926-1968. In 1926, total foreign investment in the Canadian mining and smelting sector amounted to \$219 million, or 3.6 per cent, of total foreign investments. By 1968 foreign investment in the mining and smelting sector amounted to \$1,553 million, or 9.4 per cent of total foreign investments in Canada. Thus, by 1968 the percentage of total metal mining assets, 50 per cent or more owned by non-residents, was 44.2 per cent. It should be noted that this average has been affected by the inclusion of iron mines, which in 1968 had 87.7 per cent of their assets 50 per cent or more owned by non-residents. Exhibit 7, overleaf, indicates the extent of non-resident ownership of the Canadian mineral and forest industries for the years 1965 and 1968.

METHODOLOGY AND APPROACH

The mining industry is conceptually different from the other industries under investigation. One major factor is the degree of control exercised over the industry by governments. Governmental control

EXHIBIT 7

NON-RESIDENT OWNERSHIP OF THE CANADIAN MINERAL AND FOREST INDUSTRIES,
1965 and 1968

	Per cent of Industry Assets Owned by Non-Residents *	
	1965	1968
Total Mineral Industry	64.4	-
<i>1. Total Mining Industry</i>	<i>57.9</i>	<i>62.8</i>
Total Metal Mining	38.5	44.2
Gold Mines	16.6	49.4
Iron Mines	87.5	87.7
Other Metal Mining	10.3	17.2
Total Mineral Fuels	80.9	82.3
Coal Mines	33.7	53.0
Oil and Gas Wells	81.5	83.1
Total Other Mining	48.8	57.1
Non-Metal Mines	72.3	85.0
Quarries	9.2	9.5
Mining Services	31.7	37.9
<i>2. Total Primary Metals</i>	<i>59.1</i>	<i>55.2</i>
Iron and Steel Mills	26.1	14.4
Iron Foundries	11.4	33.9
Smelting and Refining	87.3	87.9
<i>3. Total Non-Metallic Processing</i>	<i>36.9</i>	<i>51.6</i>
Cement Manufacturing	31.5	60.1
Concrete Manufacturing	4.4	1.7
Ready-Mix Concrete Manufacturing	9.5	25.3
Clay Products	34.7	28.1
Glass	47.4	54.6
Other Non-Metallic Processing	81.7	89.5
<i>4. Total Petroleum and Coal Products</i>	<i>99.6</i>	<i>99.7</i>
Petroleum Refining	99.8	99.9
Other Petroleum and Coal Products	82.8	74.0
Total Forest Industry	36.1	-
<i>1. Primary Forestry (Logging)</i>	<i>17.6</i>	<i>13.1</i>
<i>2. Total Woods Products Industry</i>	<i>28.2</i>	<i>30.8</i>
Sawmills	32.2	38.1
Veneer and Plywood	40.8	34.3
Planing Mills	3.8	2.4
Other Wood Products	16.6	-
<i>3. Total Paper and Allied Industry</i>	<i>39.4</i>	<i>38.9</i>
Pulp and Paper	38.6	38.4
Paper Boxes and Bags	30.9	25.3
Other Paper Products	64.3	59.3

*As measured as a percentage of total industry assets owned by reporting firms that were themselves 50 per cent or more controlled by non-residents.

- not available.

Sources: 1) Corporations and Labour Unions Returns Act (CALURA), 1968. (Part I-Corporations).

2) Unpublished data supplied by Statistics Canada.

Resources: Implications of Ownership, A. J. Cordell, Science Council of Canada, Special Study No. 27, May, 1973, P. 102.

* Assets tabulated are those shown on the balance sheets of corporations after deducting allowances for doubtful accounts, amortization depletion and depreciation.

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relates particularly to pollution requirements, further processing regulations and the granting of mining licences to permit production. Another difference is the reliance upon international markets for the viability of the industry.

To present a systematic analysis of the mining industry we have examined the industry as an integrated system. Thus, we have analysed the inputs into mining and the outputs from the industry in greater detail than has been the case with the other industry sectors. Exhibit 8, overleaf, diagrammatically illustrates the inter-related components in the mining sector.

Inputs to Mining

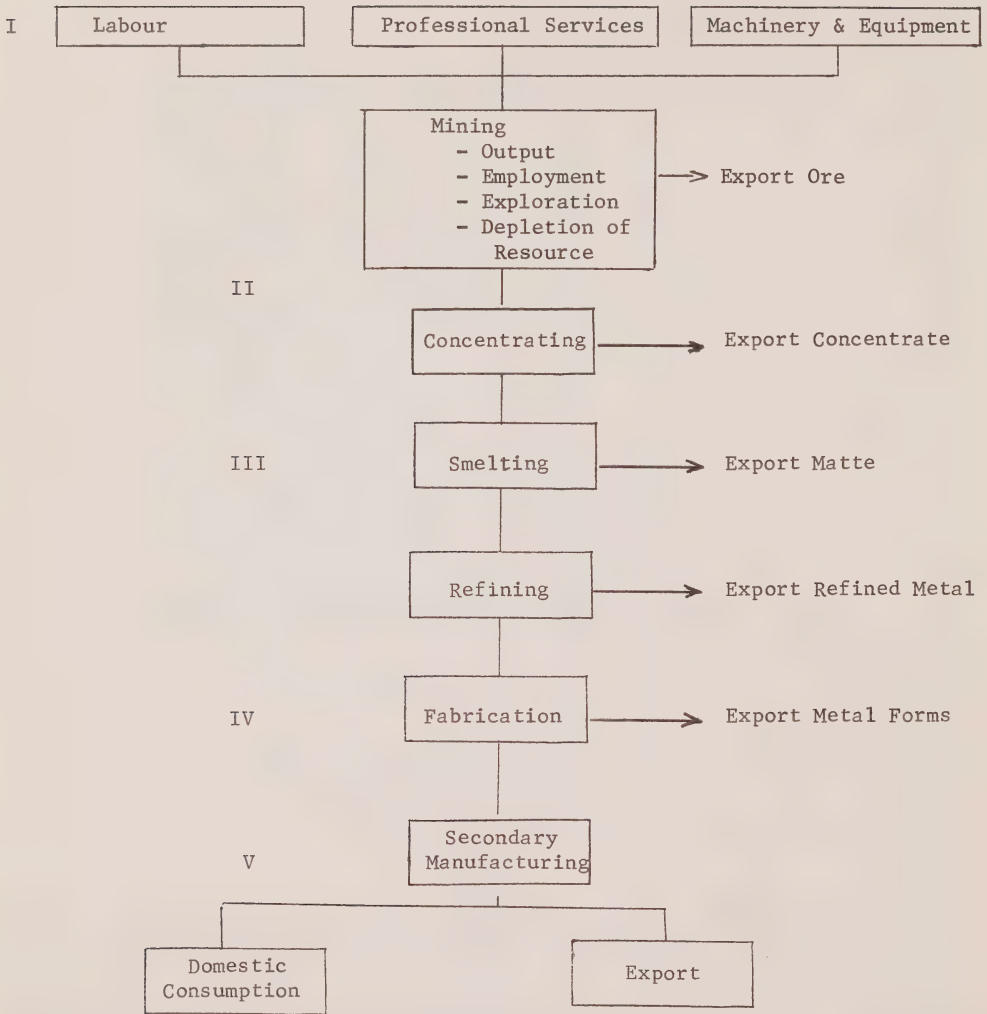
In Exhibit 8, the inputs into the mining sector are illustrated by the top three boxes (item I).

We have examined three principal inputs into the mining production process:

- labour
- professional services
- machinery and equipment.

Throughout our analysis we have related the use of each input to the ownership structure of the mining industry. Thus, we attempted to determine:

EXHIBIT 8
THE MINING INDUSTRY



- Are there systematic behavioural differences with respect to labour relations?
- Do Canadian-controlled (or non-Canadian-controlled) mining companies systematically cultivate Canadian-based or -controlled machinery and equipment suppliers, for example:
 - would they pay a 10 per cent differential to "buy Canadian"?
 - do they actively attempt to develop indigenous sources of supply?
- Do mining firms tend to hire Canadian-based or -controlled engineering consultants when their ownership is Canadian (non-Canadian)?

To obtain the required information KPM staff interviewed:

- labour organizations
- engineering consulting firms
- suppliers of machinery and equipment to the mining industry.

These interviews provided useful information beyond the analysis of the mining industry itself.

Mining and Concentrating

At the next level, item II in Exhibit 8, we examined the mining and concentrating per se. This analysis focused upon:

- output
- employment
- exploration
- depletion of the resource.

Again, we were primarily concerned with attitudes, the effect of attitudes upon behaviour, and behavioural differences, if any, related to ownership. For example, we were concerned with the attitudes of senior mining management to the question of depletion. Would Canadian-controlled companies be more concerned that the Canadian resource might ultimately be exhausted? If so, how did they view the development of Canadian resources by foreign-controlled enterprise? Did the Canadian-controlled firms practice conservation policies that were not being followed by non-Canadian-controlled corporations? Also, on the assumption that a viable mining industry is considered desirable for Canada, exploration is important to ensure continued high levels of output and employment. Exploration expenditures were discussed with the companies to determine behavioural and attitudinal differences based upon ownership, if any.

Processing

At the next stage, item III in Exhibit 8, we examined the smelting/refining activities of these companies in Canada.⁷ Specifically, we were concerned with:

- the present extent of smelting/refining
- future plans to increase (decrease) smelting/refining within Canada.

For example, have Canadian-controlled companies historically done more smelting/refining in Canada? Is this a function of their Canadian ownership?

7. For those not familiar with smelting and refining operations, Exhibit 9, opposite, describes in highly simplified terms, the treatment of non-ferrous ores.

EXHIBIT 9THE TREATMENT OF NON-FERROUS ORES

- I. When the ore is brought to the surface it is a mixture of valuable ore minerals interspersed within or among barren or worthless minerals.
- II. The ore is then concentrated, whereby, the valuable minerals are separated from the other minerals.
- III. Depending upon the type of ore, the concentrate will be sent to a smelter where a heat treatment is applied (sometimes combined with certain chemicals) to produce matte. Matte is defined as a metal which retains some sulphur content.
- IV. The matte is then sent to a refinery to obtain a commercially pure metal.
- V. The pure metal can then be fabricated into such forms as:
 - bars
 - rods
 - plates
 - sheets
 - castings
- VI. In the final, secondary manufacturing, stage a whole range of products are produced, such as:
 - wire and cable
 - kitchen utensils
 - stainless steel
 - galvanized products
 - etc.
 - etc.

Source: Mining Explained, Northern Miner Press Ltd., Toronto, 1968.

Are future smelting/refining plans contingent upon the ownership structure of the firms? These types of questions were pursued with the companies and industry leaders interviewed.

Fabrication

The next phase in the cycle as the ore moves towards final use, is what we have described as the fabrication stage, item IV in Exhibit 8. Fabrication of, say, nickel would refer to the production of rods, bars and wire. At this stage, the nickel has already reached the pure metal state through the refining process. Fabricating the metal converts it into forms which can be utilized in different secondary manufacturing processes. As such, there is an application of labour, materials and capital at the fabrication stage which adds value to the secondary manufacturing level, with the latter being the most labour-intensive.

We have conducted interviews with a number of firms operating at the fabrication stage. We attempted to ascertain two factors:

1. As purchasers of refined metal did they observe behavioural differences amongst their suppliers, based upon the ownership pattern of the metal supplying companies.
2. The extent of secondary manufacturing based upon Ontario's mineral products, and how production of secondary manufactured products could be increased.

Secondary Manufacturing

Secondary manufacturing is represented as item V in Exhibit 8. We have not examined secondary manufacturing industry in detail as this

is beyond the terms of reference of this section of the study. However, we have obtained some information with respect to manufacturing industries which use refined metal in their production process and this research is presented in the report.

Approach

In conjunction with the mining system format outlined in Exhibit 8, we interviewed:

- senior executives from machinery and equipment industries which supply the mining industry
- labour leaders
- senior executives of consulting engineering firms which serve the mining industry
- executives of the mining companies
- executives of firms, at the fabrication level, which purchase from the mining industry.

The basis upon which the interviews were conducted was the Mining Industry Questionnaire, which is included as Appendix A. The questionnaire provided a systematic framework for discussions with all of the above mentioned interviewees. Naturally, the level of detail and the structure of the actual interviews varied with the type of person interviewed and the specific areas in which his organization operated.

With respect to the actual mining companies, KPM&Co. interviewed five firms, of varying size. Two of the firms can unambiguously be classified as Canadian owned and controlled. One company is definitely foreign controlled. The remaining two companies are in a "grey area" as regards both ownership and control.

Registration of a stock in Canada does not necessarily mean that the stock is owned by a Canadian citizen or Canadian landed immigrant. Also, the question of control goes beyond the ownership of stock into areas such as the diversification of ownership and the presence or absence of voting blocks. For these reasons, we have classified the remaining two companies as "international". They have significant Canadian content, but may not necessarily be Canadian-owned and controlled.

For example, an international company, as we have defined it, might have some of the following characteristics:

- substantial voting shares held by non-Canadians
- facilities in a number of countries
- one-third, or more, of the Board of Directors composed of non-Canadians
- key management functions (e.g., marketing) located in other countries
- twenty-five per cent, or more, of senior management positions held by non-Canadians.

In order to gain a complete understanding of the entire mining industry, we have included ferrous as well as non-ferrous metals in our research. For confidentiality purposes, we will not identify companies by the minerals they produce. This conforms to our approach of considering the mining industry as a system, rather than disaggregating by individual components.

II - BEHAVIOURAL DIFFERENCES BETWEEN CANADIAN AND NON-CANADIAN-CONTROLLED MINING FIRMS

The principal purpose of this study is to identify behavioural differences between Canadian- and non-Canadian-controlled mining companies. However, as noted in the previous section, we have also examined inputs into, and the fabrication of outputs from, the mining industry. The Conclusion and Policy Considerations Section integrates the research results with respect to the complete mining system.

This section concentrates upon behavioural differences in the mining industry. In a later section we also discuss the behavioural patterns of Canadian and foreign-controlled firms which (1) supply the mining industry and which (2) fabricate the output of the mining sector. While not specifically requested as part of the mining industry terms of reference, KPM has included this additional behavioural information for two reasons. First, it amplifies the findings obtained from the mining companies and, secondly, the results are useful in themselves as further information with respect to behavioural patterns of industry in Ontario.

Throughout the course of this study we have attempted to indicate the "flavour" of these interviews to as great an extent as possible. However, we have maintained our confidentiality commitments as a first prerequisite when describing the interviews.

BEHAVIOURAL DIFFERENCES: MINING

In many respects the mining industry operates under more extensive regulatory restrictions than do many secondary manufacturing industries. For example, reference has previously been made to Section 113 of the Ontario Mining Act.

In a recent report the Science Council of Canada noted:

"Considering the tariff structures of the U.S. and other industrialized countries, and taking into account value added only, the behaviour of foreign or Canadian-owned or Canadian-controlled firms does not appear to differ significantly. However, there are alleged to be a number of significant but difficult to measure costs associated with foreign development of Canadian resources. To what extent do foreign firms automatically engage foreign or foreign-controlled engineering, advertising, geological, economic and environmental consulting firms? To what extent do foreign firms import instruments and other machines which they require in Canada?"⁸

The questionnaire presented in Appendix A specified data requirements related to these and other issues. Where possible, we requested that the firms provide numerical values for all of the factual information requested. Nonetheless, the results are presented in, primarily, a qualitative manner. There are two reasons for presenting the results in this way:

8. Natural Resource Policy Issues in Canada, Science Council of Canada, Report Number 19, January 1973, Information Canada, Ottawa, P.43.

- numerical data does not always provide an unambiguous indication of activity
- quantification may impair the confidentiality of the study.

With respect to the first point, expenditures on pollution control equipment illustrate the danger of simply presenting numerical data. Expenditures for pollution abatement are not distributed equally over time. Therefore, the time period chosen for analysis can bias the results of the study. Also, when new production equipment is installed, this equipment usually contains the most advanced pollution control techniques. It is virtually impossible to distinguish which portion of the investment relates to the "non-productive" pollution control devices.

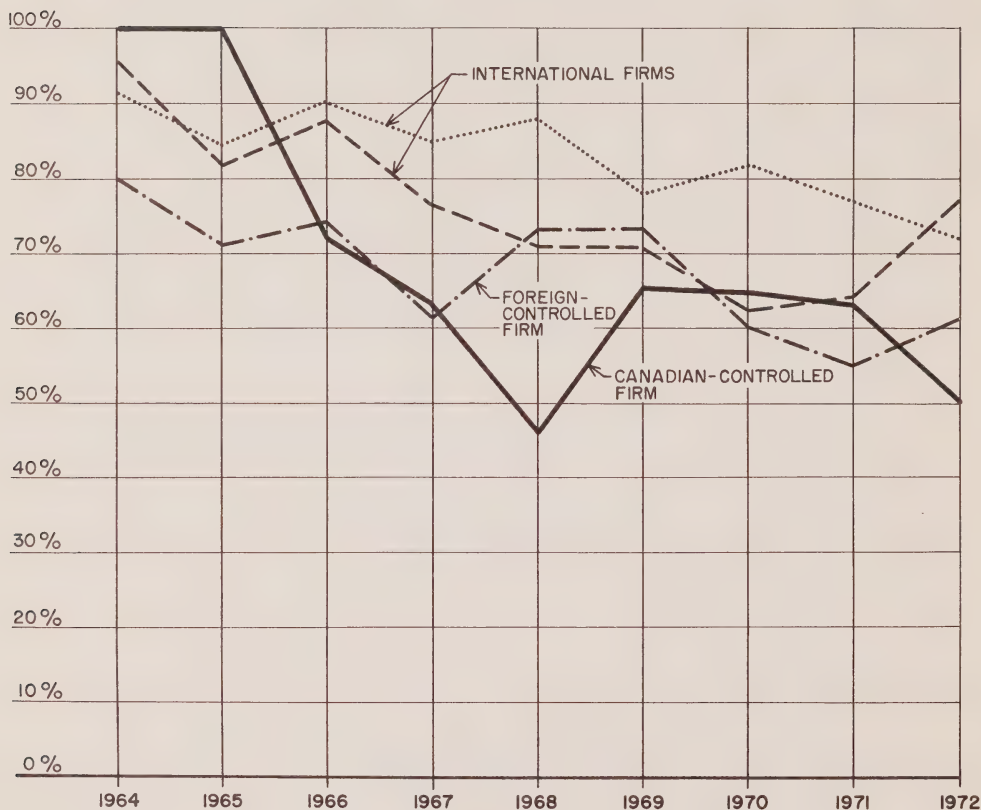
The second point, confidentiality, is self-explanatory. If we statistically described the size of a company's operation and then discussed its future plans, the potential for identifying the firm would be greatly increased.

Exploration

A principal prerequisite for the continued expansion of the Ontario (and Canadian) mining industry is exploration. It has been estimated that of last year's \$ 1 billion of world-wide exploration expenditures, \$ 100 million occurred within Canada. Historically, a large proportion of this exploration in Canada has taken place within the Province of Ontario. Recently, this expenditure pattern has become more diversified with increased exploration activity in the Western

EXHIBIT 10

EXPLORATION EXPENDITURES IN CANADA
 BY FOUR OF THE FIRMS IN THIS STUDY, AS A PERCENTAGE
 OF THEIR TOTAL WORLD EXPLORATION EXPENDITURE (1964-1972)*



* The remaining Canadian firm has not been included because its exploration expenditures are insignificant. This low level of expenditure is due to the type of mineral mined by the company.

Provinces and in the Yukon and Northwest Territories. Exhibit 10, opposite, presents data on exploration expenditures within Canada by four of the mining firms studied. It is interesting to note that the percentage of explorations expenditures in Canada has declined for all four of the firms. The information presented for these four firms may not be representative of total exploration activity in Canada. The following table indicates that exploration expenditures have been increasing in Canada. However, it would be necessary to relate exploration expenditures in Canada, over time, to expenditures abroad for all of the mining companies in order to assess the relative level of expenditures in Canada vis-a-vis expenditures abroad. Unfortunately, such data is not readily available.

EXPLORATION EXPENDITURES

<u>Year</u>	<u>Exploration Expenditures in Canada in Current Dollars (\$ millions) *</u>
1951	9,176
1952	13,578
1953	17,832
1954	26,815
1955	26,928
1956	48,400
1957	54,424
1958	32,507
1959	43,017
1960	43,553
1961	43,485
1962	43,790
1963	43,496
1964	49,000
1965	54,000
1966	59,000
1967	52,800
1968	73,200
1969	97,600
1970	115,700
1971	86,900

Source: Canadian Mining Journal, A National Business Publication, April, 1973, P. 56.

* 1967-1971 data is for "outside" of property expenditures and, therefore, not totally comparable with previous statistics.

From our discussions with the companies interviewed in this study, we have concluded that exploration activity is a function of a number of factors: of principal importance is a geologically suitable area. World supply and demand conditions for the commodity are then considered before active exploration is undertaken. Thus, an over-supply of a particular metal would tend to reduce the level of exploration. Assuming proper financing and manpower is available, the level of taxation and the degree of political stability is also of importance. However, the exact relevance of the stability factor is uncertain. We will discuss political stability in greater detail in the section on government policy.

Mining is essentially an international industry and for a company to retain its share of the international market it must be prepared to develop new properties on a world-wide basis.

KPM has concluded that beyond a certain minimum size, all mining companies, regardless of ownership, are prepared to explore and develop new mining properties outside of Canada. Size is important because smaller firms (in many cases) lack the financial and manpower capability to undertake foreign exploration activities.⁹

9. This factor may assume greater significance to Ontario due to recent changes in Federal mining tax legislation. Some analysts have suggested that there may be potentially adverse effects upon small Canadian exploration and development companies operating within the country.

Smelting and Refining

The extent of smelting and refining in Ontario varies from company to company. The two Canadian companies and one of the international companies conduct almost all of their smelting and refining operations in Canada, as required under Section 113 of the Mining Act. Two of the companies (one foreign, one international) have received Cabinet Exemptions permitting them to export 50 and 100 per cent, respectively, of their output in less than fully processed form.

Given the size of the Canadian market, the economies of transportation would suggest that some output of Canadian mines be exported in concentrate form, for refining abroad, close to the market.¹⁰ In addition, tariff rates increase with the state of processing of the ore. One of the firms indicated that they would be unable to sell all of their output in foreign markets in refined form. Many countries prefer to purchase a mixture of refined metal and concentrate. The concentrate is then processed in the refineries of the purchasing country. Senior executives of the company interviewed believed that production and, therefore, employment in Ontario would have to be reduced if 100 per cent refining in Canada was required. Present foreign markets, in their

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10. Freight rates are a contributing factor as: "...railways discovered the same things as the retailer: they could make more money by differentiating tolls...than by levying a uniform toll on all freight... High valued goods do not necessarily bring the most profit to the carrier because, while the toll per unit is high, the number of units transported is comparatively small."

Thus, the rate on unprocessed ore is lower than the rate on refined metal.

Canadian Transportation Economics, A.W. Currie, University of Toronto Press, 1967, P.133.

opinion, would not accept that amount of refined metal.

The fact that much of Ontario's ore has received further processing indicates a willingness on the part of some companies to smelt and refine in Canada. However, this desire to smelt and refine in Canada is also dependent upon the amount of output relative to the minimum economic scale of smelting and refining facilities. Thus, we find that the majority of British Columbia copper concentrates are shipped in unprocessed form to Japan. It has been suggested that British Columbia output has not reached a sufficient size to warrant the construction of a refinery.

With respect to British Columbia export of copper concentrates, Canadian ownership of some of the mining companies operating in British Columbia does not appear to have prevented them from exporting the ore in unprocessed form.

One could hypothesize that a Canadian-controlled mining company might prefer to locate smelting and refining facilities in Canada. However, we have not been able to substantiate major indications that this hypothesis is valid. There are examples of Canadian-controlled corporations establishing production facilities in non-Canadian market areas to minimize transportation and tariff costs.

For example, the United States tariff on nickel (as of 1969) is presented in Exhibit 11, opposite. This table indicates that the level of tariff protection increases based upon the extent of processing of the nickel.

EXHIBIT 11

UNITED STATES TARIFF RATES ON CANADIAN
EXPORTS OF NICKEL (1969)

<u>Form of the Nickel</u>	<u>Short Tons</u>	<u>Percentage</u>	<u>U.S. Tariff</u>
In matte	69		free
In oxide sinter	19,491	18.3	free
Refined metal (normally raw cathode nickel)	86,768	81.6	flakes - 8 cents per lb.*
			anodes - 8 per cent ad valorem*
			angles, shapes, sections - 14% ad valorem
Finished metal		Small	bars, plates, sheets, strips - 19% ad valorem
Total	106,328	100.0	

* This tariff was suspended in 1969 during nickel shortage.

Source: Canadian Minerals Yearbook 1969, Distribution Office, Mineral Resources Branch, Department of Energy, Mines and Resources, Ottawa, 1970.

Tariff Schedules of the U.S. Annotated, 1970, Tariff Commission, Washington, D.C., 1970.

Science Expenditures and the Contributions of the Resource Industries to the Canadian Economy, W. D. Bennett, Science Council of Canada, Special Study No. 27, May, 1973, P. 20.

Of greater importance is the prevailing economic/social/political climate at the time of the decision to build further processing facilities. Given Canada's historically large share of world markets in a number of minerals, it is not unreasonable to assume that a judicious exercise of moral suasion might have led to more smelting and refining within the country. However, it is always easier to analyse these problems retrospectively, and the result may not always be as intended. For example, at one time India was a major source of world manganese supply. To increase revenue from exports India imposed an export tariff. Given its strong position as a major supplier, this policy appeared reasonable. However, intensive exploration was undertaken in other countries and alternative manganese reserves were discovered. Currently, India is no longer a major manganese exporter. Although simplistic, this example indicates that systematic analysis should be undertaken before significant policy changes are implemented.¹¹

Canada's pre-eminent position as the world's leading producer of a number of minerals has been somewhat eroded in recent years. Thus, in the 1950's Canada accounted for 85 per cent of world nickel supply while today Canada accounts for less than 50 per cent. This factor will

11. Resources: Implications of Ownership, A. J. Cordell, Science Council of Canada, Special Study No. 27, May, 1973, p. 110.

affect Canada's ability to apply moral suasion in future negotiations with the mining industry.

Fabrication/
Secondary Manufacturing

Of the five mining companies interviewed in this study, three are involved in further processing which can be classified as fabrication and/or secondary manufacturing.

Two of the companies are Canadian and one is international. Of the three companies only the Canadian firms perform this additional processing within the country. In the case of the Canadian companies, both firms have substantial domestic markets which provide an economic rationale for the location of these manufacturing facilities in Canada.

Nonetheless, it is interesting to note that only one of the non-Canadian owned corporations has attempted forward integration. In addition, this international firm has not located any of its fabrication facilities in Canada.

Minerals differ with respect to the extent of further processing that can economically be integrated into a company's operation. Thus, iron ore is processed through to the final phase in one integrated company when it is made into steel, whereas nickel does not necessarily have to be fabricated into rods or bar by one integrated company. We have taken this factor into consideration in our analysis of the firms in this study. Our conclusion is that the Canadian firms have performed more fabrication in Canada than the non-Canadian-controlled firms, and this behavioural difference appears to be, partly, a function of ownership. That is, after

having considered the nature of the minerals produced by each of the companies, there is a behavioural difference with respect to further processing which appears to be solely related to ownership.

As in the case of smelting and refining, these events are historical and must be viewed within their appropriate context. Given today's economic and social climate perhaps the decision-makers would have responded differently. For example, the international firm might have given greater consideration to establishing at least some portion of its fabricating facilities within Canada.

Decision Making Process

By local decision making we refer to the ability of corporate officers, resident in Canada, to function in an autonomous manner. Autonomy is presumed to include the ability to financially commit the Canadian part of the company.

The one clearly foreign-controlled company in this study is, in fact, not really a company but a division of the parent corporation. Because the firm is not incorporated in Canada it operates within the guidelines established by the foreign head office.

An annual budget is submitted by the Canadian division for approval. Canadian corporate officers indicated that they have authority to hire at their discretion and that parent approval is not required. The Canadian division has international responsibility within the corporate structure for those functional areas which have been assigned to it.

A division of a company can function under a number of management styles. For simplicity the two extremes can be categorized as:

- decentralization (divisionalization)
- centralization.

Within the category of decentralization, the extreme is to allow the division manager to establish the price of his product for purchase by either external purchasers or other divisions within the company and/or to function as an autonomous "profit centre" (for an elaboration of these concepts see, Modern Management Methods, E. Dale and L. Michelon, Pelican Books, United Kingdom, 1966).

The division of the foreign-controlled company under analysis tended to operate under the "centralization" concept. That is, the division was restricted to a fixed budget which required head office approval and internal (company) transfer prices were not established by the Canadian division.

One of the international companies has a mixed Board of Directors with Canadian and non-Canadian participation. The Board does not have committees concerned with specific functions such as marketing. The Board of Directors appears to exercise general control, with day-to-day decisions at the discretion of corporate management. Based upon our discussions with the company we have concluded that the Canadian operation of this international company is autonomous, as we have defined that term.

The other international company represents interesting characteristics associated with a change in ownership structure from Canadian to international. The company has experienced a diminution of Canadian autonomy and decision-making power. The necessity of reporting to a Board of Directors which now includes influential non-Canadians has limited the autonomy of this firm. The exact extent of this loss of autonomy is difficult to quantify. The Board of Directors has responsibility for confirming initial large scale expenditures and for monitoring the progress of these developments. At this time the size of a project to be referred to the Board has not been clarified. Management retains responsibility for day-to-day operating decisions. It appears that the addition of non-Canadians to the Board of Directors has resulted in an expanded role for the Board and, thus, some diminution in the decision-making responsibilities of the Canadian management.

Labour/
Community Relations

Analysis presented in this section is a result of KPM interviews and is not based upon the employee questionnaires. The results of these questionnaires are discussed in greater detail elsewhere in this study.

KPM&Co. interviewed senior union executives in two unions (one Canadian and one international union). In both cases the strong conclusion was that there is no behavioural difference in labour (and community) relations based upon ownership. Rather than being a leader in the field of labour relations, one Canadian-controlled company in this study appears

to have performed at a level of industrial harmony below that of non-Canadian-controlled corporations in the study.

Purchase of Engineering
Consulting Services

As noted by the Science Council, activities of Canadian-vis-a-vis non-Canadian-controlled corporations with respect to the purchase of engineering services are of importance. Is Canada losing highly skilled engineering jobs because of the purchasing activities of the non-Canadian controlled corporations?

There appears to be a tendency for Canadian-controlled mining corporations to maintain a "buy Canadian" policy with respect to the purchase of engineering consulting services.¹² Particularly when a new, foreign-controlled corporation develops a facility in Canada there is a propensity to hire a "name" organization. In many cases this firm is from the home country of the foreign investor. As the foreign-controlled firm matures within Canada, it may begin to utilize Canadian-based consulting engineering services. This is considered good corporate policy as the local engineers are more familiar with the area and face-to-face communications are made easier.

We have concluded that some difference in behaviour does exist between Canadian- and non-Canadian-controlled corporations with respect to the purchase of Canadian-based consulting engineering services. In

12. For example, a number of Canadian consulting engineering firms noted that the Canadian steel industry had actively attempted to encourage Canadian consulting engineers.

one case, this difference appears to have declined as the subsidiary matured within the Canadian environment. Nonetheless, the initial investment was substantial and resulted in the loss of a significant number of Canadian engineering man-years.

When performing work abroad there does not appear to be a noticeable tendency for the firms interviewed, Canadian- or non-Canadian-controlled, to actively attempt to employ Canadian consulting engineers. Particularly when funds are obtained via another country, there is usually a requirement to purchase a specified amount of equipment and services from the funding country.

The use of Canadian funds as a vehicle for obtaining access to foreign markets was discussed by a number of companies (consulting engineering and fabricating, as well as mining firms). It was suggested that foreign aid and the provision of loans should require that a greater percentage of the funds be used for the purchase of Canadian-produced goods and services.

International Trade

All companies agreed that the market for ores in the unprocessed state is international and that tariff barriers are not significant. In addition, the companies suggested that free trade at the metals levels would also not have a significant impact upon the level of exports and imports.

As previously noted, the two Canadian-controlled firms are involved with additional fabrication activities in Canada. One of these firms suggested that free trade would permit the dumping in Canada of

foreign government subsidized production. Canadian-based companies are essentially oriented towards the domestic market and do not receive substantial government export incentives. Therefore, this Canadian-controlled company could not see substantial economic benefits to be derived from free trade.

The other forward-integrated Canadian mining corporation expressed similar opinions with respect to the impact of free trade on secondary manufactured products. This company believed that a transition period would be required before a movement towards free trade is implemented, so that the firm could prepare itself to successfully compete with the foreign companies.

Management Opportunities

None of the companies, Canadian- or non-Canadian-controlled, had a definite "hire Canadian" policy. All expressed the desire to have the ability to hire employees irrespective of nationality.

All of the senior corporate officers in the Canadian-controlled companies were Canadian citizens. One international company had Canadian citizens in four of five senior management positions. This firm had previously been Canadian-controlled and its change in status to international has been relatively recent.

The foreign firm in our study has substantial numbers of non-Canadians in senior executive positions. The data provided to us by the firm is for its entire world-wide operations and, therefore, one would not expect the number of Canadians in senior positions to be large.

However, the Canadian part of the corporation provides a very large proportion of the company's total revenue. These two factors balance each other and the small percentage (6.67 per cent) of Canadians in senior management positions must be viewed within that total context.¹³

The other international company has a mixture of Canadians and non-Canadians in senior positions. During the course of the interviews the hiring process of senior managers was described as "informal" with respect to nationality.

Based upon our sample, the Canadian firms tend to have more Canadians in senior management positions. This occurs even though neither of the Canadian companies have an explicit "hire Canadian" policy.

Financial

All of the firms were capable of obtaining sufficient capital in the Canadian financial markets. We asked whether the imposition of exchange restrictions would impair their ability to obtain capital. Two firms, neither Canadian-controlled, expressed the view that exchange restrictions could be difficult during periods of large capital investment. Even though sufficient capital might be raised in Canada during periods of high investment, the rate of interest might be increased.

13. This firm's investment in Ontario is relatively recent. During the course of our interviews the company suggested that as the Ontario operation matures, a greater number of Canadians would be hired for senior positions.

The principal source of capital for the corporations in this study is retained earnings. None of the firms obtained more than 25 per cent of capital requirements from Canadian banking sources. In 1972, the five firms in this study obtained all of their required capital from sources within Canada. However, these companies did not undertake significant capital expenditures in 1972 and, therefore, capital requirements could be met from within the country.

The consensus of all of the companies was that large corporations, Canadian- and non-Canadian-controlled, are able to obtain required funding through Canadian financial markets. However, the companies expressed the opinion that while sufficient funding may be available for large firms operating within Canada, this may not be the case for smaller corporations.

One of the Canadian-controlled firms suggested that the Canadian branch banking system is inferior to the U.S. unit banking system. This company's experience with small independent U.S. banks led them to conclude that the U.S. banking system can be more dynamic and innovative.

We have calculated the ratio of debt to equity for the firms in this study. Only one firm (an international company) has a ratio of debt to equity in excess of one/one. This international company is experiencing difficulty in complying with certain provincial regulations. The high debt/equity ratio is, in part, the result of recent investments in other countries. The company maintains that it is financially

unable to undertake new capital investment in Ontario to comply with provincial legislation. This case indicates one of the disadvantages of capital mobility. The high debt/equity ratio limits the influence of "moral suasion" that the provincial government can exert on the firm. Strict enforcement of provincial regulations might weaken the financial structure of the firm and ultimately result in the loss of substantial levels of output and employment in the province.

Pollution Control

As we have discussed in a previous section, quantifying pollution control expenditures does not necessarily provide an accurate assessment of a company's activities in this area. We have had discussions with provincial government officials to determine whether behavioural differences exist based upon ownership, with respect to pollution control. These officials indicate that there are no behavioural differences and that all companies are complying with the rules and regulations established by provincial authorities.

In Ontario, there are four companies which are actively undertaking innovative research and development in the pollution control field. Provincial officials indicated that three of these firms are non-Canadian-controlled, while the fourth firm is Canadian-controlled. One official believed that the non-Canadian-controlled corporations were attempting to be "good corporate citizens" and this was reflected in their R & D activities in the area of pollution control.

Purchase of Machinery
and Equipment

We attempted to determine whether Canadian- or non-Canadian-controlled corporations have an explicit "buy Canadian" policy and whether, if such a policy existed, the firm would be prepared to pay a price differential in order to purchase Canadian-made machinery and equipment.

One of the Canadian-controlled companies indicated it had an explicit buy Canadian policy. All of the firms indicated that they tend to source Canadian to as great an extent as possible.

All of the firms were concerned that import restrictions upon foreign machinery and equipment would result in the development of domestic monopolies. The companies maintain that such monopolies would be inefficient and the result would be increased costs for an industry that must be competitive in world markets.

Discussions with suppliers of machinery and equipment to the mining industry corroborated that no substantial "buy Canadian" policy exists by either Canadian- or non-Canadian-controlled mining corporations. However, mention was made of the Canadian-owned steel industry which appears to have actively attempted to foster the development of a Canadian-owned machinery and equipment industry.

One of the Canadian-controlled mining companies indicated that their policy is to source in the local country when making an investment abroad. Thus, Canadian suppliers are not given export preference when this Canadian mining company establishes a facility abroad.

III - INDUSTRIES SUPPLYING THE MINING SECTOR AND INDUSTRIES FABRICATING METAL PRODUCTS

We have analysed the mining industry as an integrated system and have therefore conducted selected interviews with suppliers to the mining industry and fabricators of the refined output of the mining sector. In this section, we will examine the behaviour of a small proportion of these input and output firms.

INPUTS TO MINING

We have conducted interviews with three principal suppliers to the mining sector:

- labour
- consulting engineering services
- suppliers of machinery and equipment.

In this section, we will concentrate upon the latter two categories.

The mining industry in Canada is highly developed. We have previously noted Canada's pre-eminent position in the production of zinc, nickel, silver, iron ore and copper. Exhibit 12, overleaf, indicates the impact of the Canadian mining industry with respect to the purchase of machinery, equipment, services, etc. This represents a significant demand and KPM attempted to determine whether such requirements have given rise to a well developed Canadian industry supplying the mining sector.

EXHIBIT 12PROJECTED CANADIAN MINING PURCHASES (1972-1976)

CATEGORY	(\$000,000)				
	1972	1973	1974	1975	1976
Primary Mining/Quarrying/ Smelting Machinery and Supplies	850	892	935	983	1,032
Chemicals/Additives	283	297	312	328	345
Steam-Water Air Equipment	140	148	155	164	172
Electrical Equipment	200	208	218	230	240
Process Control Equipment	85	90	94	98	104
Materials Handling and Transportation Equipment	482	505	530	557	585
Services (consulting, banks, computer services,	567	595	623	655	688
Miscellaneous (lubricants, fuel, office furniture, etc.)	226	238	250	262	275
TOTAL	2,833	2,973	3,117	3,277	3,441

Source: Mining Markets in the 1970's, Canadian Mining Journal,
National Business Publication, February, 1973.

Machinery and
Equipment Suppliers

A number of industries have been established in Canada to supply machinery and equipment to the Canadian mining industry. With some exceptions, particularly in the geophysical field, almost all of the major suppliers of heavy machinery and equipment are subsidiaries of non-Canadian-owned corporations.

The mine machinery industry has experienced a pattern similar to that of a number of other industry sectors. Successful Canadian-owned operations were taken over by foreign corporations or the foreign company established a subsidiary in Canada via direct investment.

In its Submission to the House of Commons Committee on Finance Trade and Economic Affairs (May, 1970), the Mining Association of Canada noted that:

"Some special equipment must be imported, but it is estimated that about 80 per cent of all the industry's capital requirements for machinery as well as almost all of its operating supplies and services are purchased in Canada."

It may be true that 80 per cent of the mining industry's requirement for machinery is ordered in Canada, but this does not necessarily imply that all of the value added and jobs are created in Canada. Based upon our interviews it would appear that the Canadian value added in such mine machinery ordered in Canada ranges from a low of 10 per cent to a high of 100 per cent. It was not possible to quantify the exact value added and employment opportunities lost to Canada, but the amounts are not insignificant.

EXHIBIT 13COMPOSITE PROFILE OF TRUNCATED
SUBSIDIARY MINE MACHINERY PRODUCERS IN CANADAIMPORTS AND EXPORTS

1. As much as two-thirds of the total product line can be imported.
2. Canadian value added represents approximately 50 per cent of sales.
3. Either prohibited from exporting by the parent; or, permitted to export certain product lines with no ability to expand export sales because of lack of marketing expertise.

RESEARCH AND DEVELOPMENT

1. All R & D performed by parent company.
2. Process research may be done by the parent, resulting in design modifications being performed outside of Canada.
3. Therefore, there is little or no requirement for engineering consulting services.

DECISION MAKING

1. In one case the President of the Canadian subsidiary was resident outside of Canada.

In addition, some mine machinery is imported into Canada under Tariff Item 427700-1. Duty can be remitted under this tariff item for machinery and equipment not available from production in Canada.

A number of interviewees recommended that the applicable duty be re-applied when a commitment is made by a company to produce the product in Canada. At this time, duty may be re-applied when the Canadian produced product is offered for sale and if the product produced in Canada represents a satisfactory equivalent of the product presently being imported.

Exhibit 13, opposite, presents a profile of a number of companies which supply the mining industry. Obviously, not all firms operate in this manner. Nonetheless, the profile developed in Exhibit 13 is typical of a number of corporations interviewed. For example, inability to export (or restriction to specific product lines) was common. Little or no research and development by Canadian subsidiaries was found in a number of interviews.

It is interesting to contrast this situation to what has taken place in the United States and Sweden. In 1971 the United States mine machinery industry performed as follows:¹⁴

14. U.S. Industrial Outlook 1972, U.S. Department of Commerce, Washington, D.C.

- value of shipments:	\$563 million
- employment:	18,800
- exports:	\$233 million
- imports:	\$12 million (2.8% of apparent domestic consumption)

The U.S. has experienced significant exports of mine machinery equipment, while imports have been negligible with respect to total demand.

In 1971 Canada and the United States had the following value of mineral production:

	<u>Canada</u>	<u>United States</u>
Metallic	\$2.9 Billion	\$3.4 Billion
Non-metallic	\$1.0 Billion	\$5.9 Billion
Fuels	<u>\$2.0 Billion</u>	<u>\$20.8 Billion</u>
TOTAL	\$5.9 Billion	\$30.1 Billion

Thus, the U.S. output is, approximately, six times the size of Canadian production. Nonetheless, Canadian production is substantial and the value of metals output is almost equal to that of the United States.

With respect to Sweden:

"The Swedes have placed great importance on indigenous technological development in steel making and in manufactured engineering products. ...The Swedish mining and forest industries have given rise to a machine industry including pneumatic equipment and mineral and metal working machines.¹⁵

15. Economic Development Strategies and Foreign Ownership Policies of Selected Countries, P. Mohr, Department of Energy, Mines and Resources, Mineral Bulletin MR123, Information Canada, Ottawa, 1972.

This performance of the Swedish vis-a-vis the Canadian mine machinery industry cannot be attributable to a larger mining industry in Sweden. The following table compares Canadian and Swedish output for selected mineral products. In all but iron ore, Canadian production is far in excess of Sweden's.

PRODUCTION OF SELECTED MINERAL PRODUCTS
SWEDEN AND CANADA, 1970 AND 1971

	Copper ^A	Lead ^A	Zinc ^A	Nickel ^A	Asbestos ^A	Coal ^A	Iron Ore ^C
Sweden	30,300	88,000	105,600	-	-	-	36,749
Canada	721,430	433,465	1,397,246	294,341	1,661,644	15,132	47,352

Source: The Canadian Mining Journal, A National Business Publication, February, 1973, P. 43.

A = Short tons

B = Excluding lignite (000) short tons

C = (000) short tons

Given the size of the Canadian market it does not appear unreasonable to assume that sufficient demand was available for the development of more Canadian-owned mine machinery producing corporations.¹⁶

16. The extent of the domestic market is one determining factor in the scale and specialization of Canadian production plants. See Scale and Specialization in Canadian Manufacturing, D. Daly, B. Keys and E. Spence, Prepared for the Economic Council of Canada, Staff Study Number 21, March, 1968.

In fact, Canada has developed a viable Canadian-owned geophysical exploration industry which supplies an estimated 80 per cent of the world market. This industry produces such products as magnetometers for geologists and airborne multisensor systems used in exploration and mapping activities.

One of the firms interviewed gave the following three reasons for the success of Canadian-owned firms in this field:

- there has been a strong domestic demand for the past 20 years
- the Canadian industry has had access to advanced American electronic precision components
- talented Canadian individuals recognized the market at an early stage when there was little competition.

These companies have now developed to the stage where they are world leaders in their fields. None of the geophysical firms interviewed indicated that a buy Canadian policy was the cause of their success. They expressed the view that the Canadian mining industry, regardless of ownership, buys on the basis of price and quality. They did suggest that government activity in surveying and mapping was of considerable support, particularly in the initial phases of development; this may be the major reason for the development of our geophysical exploration industry.

Executives in these Canadian-owned companies indicated that they had received "numerous" take-over proposals from foreign companies. However, they have decided to remain Canadian owned, at least for the present.

Consulting
Engineering Services

KPM&Co. interviewed a small number of consulting companies which provide engineering services to the mining industry. While it is difficult to generalize based upon this sample, from our discussions it appears that Canadian-owned consulting engineering firms are experiencing growth in the mining field. One firm suggested that certain Canadian mining and steel companies have actively attempted to aid in the development of Canadian consulting firms; however, we were not able to corroborate this statement.

All of the firms suggested that a residual bias exists to hire "name" foreign consultants for very large projects; this tends to confirm the findings in the KPM&Co. study on architects and engineering consultants.

One company suggested that if foreign expertise is required, that expertise should be purchased only to the minimum extent required. Thus, if a project requires two per cent foreign expertise then the foreign consultant should work on that two per cent, with Canadians responsible for the remaining 98 per cent of the project.

METAL FABRICATORS

We have previously described the fabrication stage as that activity which converts the pure metal into forms (such as rods, bars, and wire) which can be utilized in different secondary manufacturing processes.

EXHIBIT 14CANADIAN PERFORMANCE IN THE MINERALS INDUSTRY, 1969

(Trade Balance in Thousands of Dollars)

Mineral	Canada's Percentage of World Production	Ores, Concentrates and Scrap	Primary Refined Forms	Fabricated Forms
Nickel	40 %	154,670	241,160	- 5,825
Zinc	22 %	102,606	74,388	- 770
Asbestos	47 %	104	216,171	- 7,633
Silver	15 %	33,914	31,616	- 1,171
Lead	9 %	26,179	26,946	100
Aluminium	11 %	-83,306	442,897	-55,103
Copper	9 %	223,981	250,809	32,228

SOURCE: Innovation and the Structure of Canadian Industry, P.L. Bourgault
Background Study for the Science Council of Canada, Special
Study Number 23, Information Canada, Ottawa, 1972. P52.

Kates, Peat, Marwick & Co.

Both of the Canadian companies in this study have integrated forward to the fabrication stage. One of the international firms performs fabricating operations, but the facilities are not located within Canada. While the Canadian companies fabricate products primarily for domestic consumption, both firms are active in export markets.

Based upon published statistics, Canadian fabrication in a number of commodities has not been sufficient to satisfy domestic requirements. Exhibit 14, opposite, indicates Canada's percentage of world production for a number of mineral products and also presents the level of imports for the fabricated forms of these metals. Canada's trade balance becomes negative for five of the seven fabricated forms. This is in contrast to the positive level of exports for ores/concentrates/scrap and for primary refined forms.

In 1971 Canada had a positive trade balance for iron and steel products of \$335,082,000 (expressed in U.S. dollars). From Exhibit 14 we find that Canada also has a positive trade balance in the fabrication of copper forms. Both of these industries contain Canadian firms which have integrated forward from the resource to the fabrication stage. However, it is difficult to determine whether this represents a spurious correlation, or is an example of cause and effect.

During the course of the study we interviewed a number of metal fabricators. One of the larger companies, a foreign-controlled subsidiary, indicated:

"we normally don't export to the parent country, it makes no sense to compete with the parent company".

In addition, this organization performed no internal research and development. The parent company assumed responsibility for all research and development activities.

However, we did not conduct sufficiently widespread interviews with subsidiary fabricating companies to determine whether this approach to the export market and research and development is representative.

IV - ATTITUDES TO FOREIGN OWNERSHIP AND RELATED ISSUES

As an integral part of this study we have discussed policy alternatives with selected senior executives in the mining community. In addition, our discussions have provided these executives with a vehicle for expressing their opinions as to broader issues facing their industry, and the economy in general.

Where appropriate, we distinguish among the sources of the opinions. We have included the opinions of government officials, labour leaders, marketing, supply and fabricating executives in order to present a more complete understanding of the mining industry as a system.

ATTITUDES TO NATIONALISM AND FOREIGN INVESTMENT

Naturally, the three non-Canadian controlled mining companies had an international outlook and were concerned with the rising level of nationalism in the country.

One of the Canadian companies felt strongly that foreign investment was advantageous. They believed that the increase in nationalistic feeling was overly-emotional.

The other Canadian company expressed the opinion that, in general, Canadian-owned firms are better corporate citizens than non-Canadian companies. However, they expressed doubt that sufficient capital is available in Canada to adequately finance all of the country's required investment. Senior executives in this firm suggested that they

would favour incentives for Canadian companies rather than restrictions on foreign investment.

In general, the response of those senior mining executives interviewed was not strongly nationalistic.

International Labour Union

Discussions with representatives of an international union indicated a concern with respect to the emotionalism associated with the present increase in nationalistic feeling. They believed that Canadian companies should be developed but they also indicated that Canadian companies are not, *ceteris paribus*, better corporate citizens.

Consulting Engineers

The Canadian firms in this sector appeared to have more nationalistic attitudes. One company expressed the opinion that Canada was not maximizing the human resource potential of its people. They maintained that this human potential could not be properly developed under a branch plant system of management.

Nonetheless, one Canadian-owned consulting engineering firm expressed the view that access to United States markets is important to their long-term development. If Canada introduced stringent regulations with respect to the use of foreign-based consulting firms, this Canadian company was concerned that the United States would initiate reciprocal action.

One Canadian consulting engineering firm "bought itself out" from the original foreign owners. A senior executive in this firm expressed bitterness that the "Canadianization" of the company has had little or no impact upon the firm's access to public or private projects.

GOVERNMENT CONTROL OF MERGERS AND ACQUISITIONS

We were interested in corporate attitudes regarding the proposed Federal Government "take-over" legislation. In addition, we asked the interviewee to discuss the impact of the legislation based upon whatever knowledge he might have of similar forms of screening mechanisms in other countries.

Mining Companies

Both Canadian companies expressed concern with the take-over of Canadian companies, particularly those cases in which the Canadian firm had been profitable. Senior executives in both firms indicated that they favour a screening agency to ascertain whether a take-over of an existing Canadian company is of net economic benefit to the country.

This attitude is significant because, as previously mentioned, neither Canadian-controlled firm could be described as being overly nationalistic.

One of the international firms indicated that it would be difficult to prove that Canada had always benefited from a change in ownership structure from a Canadian- to foreign-controlled corporation.

EXHIBIT 15

**THE EFFECTS OF SOME SIMULATED CHANGES IN TAXATION ON THE AGGREGATE*
PRESENT VALUE OF TAX RECEIPTS FROM 42 CANADIAN BASE METAL DEPOSITS***

	Tax Holiday (years)	Federal Corporate Income Tax Rate ¹ (\$)	Depreciation Rate (multiple of existing rate)	Depletion Allowance (%)	Number of Economically Exploitable Deposits	Total Net Present Value of Cash Flows Discounted at 15% (\$ million)	Total Present Value of Tax Revenues ² Discounted at 7% (\$ million)
Case A:	a) 5	50	1.00	33.3	25	300.9	421.3
	b) 3	50	1.00	33.3	24	269.0	480.6
	c) 0	50	1.00	33.3	23	191.9	609.4
Case B:	a) 3	40	1.00	33.3	24	283.9	428.6
	b) 3	50	1.00	33.3	24	269.0	480.6
	c) 3	60	1.00	33.3	15	193.8	440.5
Case C:	a) 3	50	1.50	33.3	25	293.2	337.9
	b) 3	50	1.00	33.3	24	269.0	480.6
	c) 3	50	0.50	33.3	15	198.4	418.0
Case D:	a) 3	50	1.00	33.3	24	269.0	480.6
	b) 3	50	1.00	25.0	24	259.3	512.3
	c) 3	50	1.00	15.0	24	246.3	550.4

* The boxes indicate the taxation changes simulated for each of the four cases.

1. The changes in tax rate only apply to the taxable income in excess of \$35,000.
2. The tax revenues include the revenues received by both federal and provincial governments.

Toward Optimizing the Public Gains from the Exploitation of National Mineral Resources, A. Azis and J. Zwaitendyk, Department of Energy, Mines and Resources, Mineral Bulletin MR129, Information Canada, Ottawa, 1972.

Kates, Peat, Marwick & Co.

The remaining two non-Canadian-controlled firms expressed concern that governmental discretion in screening mergers and acquisitions may create uncertainty and, therefore, reduce potential investment.

The foreign-controlled and international companies expressed a strong preference for specific and well defined rules rather than administrative discretion. The executives interviewed indicated that specific rules reduce uncertainty and allow long-range planning to occur. Administrative discretion, it was suggested, would create uncertainty and may lead to an unfavourable investment climate.

Engineering Consulting Firms

The Canadian-owned consulting engineering companies indicated that they have been retained by companies which have come under non-Canadian control. Senior executives in these consulting firms questioned whether these take-overs have made a positive contribution to the Canadian economy. These executives agreed that some form of take-over screening mechanism is required.

TAXATION

On January 1, 1973 the new Income Tax Act came into effect. It is generally agreed that the effective rate of taxation on the mining industry has been increased.

Exhibit 15, opposite, was developed by the Department of Energy, Mines and Resources. Changes in the federal corporate income tax rate and in the rate of depreciation have the greatest impact upon the

number of economically exploitable base metal deposits. Thus government can control both the rate of exploitation of the resources as well as the amount of tax revenue it receives by altering policies.

Mining Companies

All mining firms interviewed agreed that the recently introduced tax legislation is less favourable than had been the case in the past. Also, there was general agreement that smaller mining companies would be hurt by the new legislation, but that the impact upon the larger corporations will be less severe.¹⁷

Taxes can be construed as a cost of doing business. One possible result of increasing the burden of taxation on the mining industry may be the mining of only higher grades of ore within the ore body. In subsequent years it may not be possible economically to return to the deposit and mine the lower grades of ore. This may result in a social and economic loss to the country. One government official suggested that if pre-production expenses are not permitted to be written off, then the company may mine the entire ore body in an attempt to spread its pre-production expenses over a greater volume of output.

The companies interviewed generally agreed that present taxation policies with respect to mining are equitable. However, both Canadian-controlled companies suggested that a policy statement as to the future of the 25 per cent provincial tax abatement would facilitate

17. The requirement that depletion allowances must be earned appears to be one of the principal adverse factors with respect to small mining companies.

long range planning.¹⁸

POLITICAL STABILITY

The mining companies expressed strong feelings with respect to the political climate in Canada. One non-Canadian-controlled company suggested that the industry is being blamed for past pollution problems. Another firm indicated that when mining is successful the industry appears to be very profitable. However, they felt that this overlooked the risks involved and the large number of unsuccessful mining ventures.

Four of the companies interviewed (one of which is Canadian-owned) are actively involved in exploration activities. All of the companies indicated that exploration funding is sensitive to the political climate and will move easily from one jurisdiction to another. The Canadian firm was particularly adamant that recent policy statements in a number of Canadian provinces could lead to a discontinuance of exploration activity in those areas.

The mining industry has historically taken the position that its funds are highly mobile and very sensitive to the economic and political climate. For example, Price noted:

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18. "The general corporate tax rate which was 50% in 1972 will be reduced by one percentage point each year until it reaches 46% in 1976. The Federal Government abates to the provinces 10 points of the corporate tax rate. Beginning in 1977, the abatement to the provinces in the case of mining companies will be increased by 15 percentage points, reducing the federal corporate tax rate on mining companies to 21%. At that time, the provinces will be in a position to occupy 25 percentage points of the corporate income tax rate on mines." Canadian Mining Journal, February, 1973, A National Business Publication, P. 48.

The companies interviewed suggested that an early clarification of Provincial Government policy with respect to these percentage points would aid in the companies' long term exploration and development planning.

"The arguments urged against the adoption of the eight hour legislation are very numerous . . . it would mean reduction of wages and consequent dissatisfaction of the men; that it would decrease the output and profits of the industry, make low grade propositions unworkable and discourage influx of capital; that the eight hour law has in fact had disastrous effects in British Columbia, Australia and parts of the United States, and is driving capital and labour out of England and the United States. . ."19

It is difficult to assess the impact of non-quantifiable factors, such as political climate, upon the standard return on investment calculations for development of new facilities. The strong reactions of those companies interviewed suggest that stability does assume some role in their development calculations.

POLLUTION

The mining companies generally believed that Ontario's pollution standards, while rigorous, were reasonable and were being fairly enforced.

One of the Canadian-controlled companies suggested that if ground level emission standards are being met, further reductions of air pollutants should not be required.

One of the international companies felt that, in some cases, insufficient time was given for the company to implement required pollu-

19. Report of S. Price, re Limitation of the Hours of Labour of Underground Workmen in the Mines of Ontario, to the Honourable W. Hearst, Minister of Lands, Forests and Mines, January 27, 1913.

tion controls. In addition, they suggested that Government should aid in funding research and development expenditures on pollution control equipment. Also, in their opinion, the present tax rebates on pollution abatement expenditures are insufficient.

The other Canadian-controlled company indicated that Canada's pollution control requirements should remain comparable to world standards. They suggested that if Canadian standards became more severe with respect to world requirements, Canadian-based industry could find itself at a serious cost disadvantage in international trade.

DIRECT GOVERNMENT INVOLVEMENT IN MINING

In many countries, and in some Canadian provinces, governments have become actively involved in the exploration and development of mining properties. For example, the Province of Quebec established the Quebec Mining Exploration Company (SOQUEM) in 1965 in order to:

- carry out mining exploration
- participate in the development of discoveries
- participate in the bringing into production of mineral deposits.

Mining Companies

Reaction by mining companies to the concept of government participation was generally positive.

Only the foreign company in our survey felt that government should not become actively involved in the mining industry.

They did not believe that government equity participation in mineral development would be of assistance to the firm's operations.

The remaining companies were prepared to participate in joint ventures with government, provided the government is willing to assume its share of the risk through equity financing. Both international companies believed that greater government involvement is inevitable, and one international firm suggested that the mining industry should take the lead in involving governments directly.

Government Officials

KPM&Co. discussed direct government exploration and development activity with three Ontario and one Federal government official.

One government official disagreed with the concept of direct government involvement while the other federal and provincial officials felt that such participation was justifiable.

It was suggested that government involvement in a successful mining venture would ensure greater returns to the people of the province. In addition, private companies may not be prepared to develop holdings due to the firm's individual circumstances, such as a shortage of capital. A government agency might not be so subject to such internal considerations.

Another official suggested that government participation would provide a stability factor in exploration activity. This stability would be of assistance to firms and individuals which supply goods or

services for exploration activity. Finally, a government agency could concentrate its activities in particular geographic areas, thereby, aiding regional development programs.

The negative provincial official expressed the opinion that there are better methods for the government to obtain its share of mining profits. He believed that government should not gamble the taxpayers' money in an attempt to develop mineral deposits. This activity, in his opinion, would be better left to the private sector.

GOVERNMENT
STABILIZATION ACTIVITY

During the course of our interviews we attempted to determine government policies that could be instituted to aid in stabilizing employment in the mining industry. Many countries, such as Mexico, have stated policies which prohibit layoffs during cyclical downturns in business activity.

During a recent downturn in world demand for nickel, the French government provided loans on nickel stockpiles in an attempt to offset the possibility of layoffs and declines in production.

All of the companies interviewed, including the Canadian, responded negatively to this type of proposal. The general consensus was that government intervention could not be of assistance.

One of the international companies suggested that such a loan policy would be inappropriate when fundamental structural changes

are required. Loans on stockpiles would simply postpone the adjustments that would eventually have to be made.

DEPLETION OF RESOURCES

In recent years a number of analysts have suggested that mankind's finite resources will soon be exhausted unless drastic action is taken to curtail resource utilization.²⁰

Two companies, one Canadian, one international, responded to this topic. In addition, we have included quotations from a publication by the Department of Energy, Mines and Resources. Based upon published data, the International Nickel Company of Canada, Ltd. mined 28,200,000 tons of ore in 1971. As of December 31, 1971 stated company reserves were 387,000,000 tons. Production was thus 7.3 per cent of proven reserves. In 1966, Inco mined 17,550,000 tons of ore and indicated reserves of 324,870,000 tons; thus, the ratio of 1966 production to reserves was 5.4 per cent.

As Zwartendyk has noted:

"... when the question comes up of the danger of our "running out" of a particular mineral, many mineral scientists tend to peer almost exclusively ... towards the problems of discovering more deposits of the types now being mined. As if, even in the long run, discovery of new deposits were the only way to develop reserves, and when there are none left to discover,

20. See, Limits of Growth, Meadows, Meadows, Randers and Behrens. A Report for the Club of Rome's Project on the Predicament of Mankind, Universe Books, New York, 1972.

that will be the end of it. But we will never physically "run out" of a mineral, because the sheer limits of the amount in place in the ground are far beyond the likely economic limits of its utilization. Exhaustion is an economic concept: supplies do not give out absolutely, but they become more difficult to obtain so that they become potentially more costly . . . History is full of what we now consider amusing examples. For instance, almost a century ago, in 1874, Pennsylvania's State Geologist Wrigley estimated that the United States had enough petroleum to keep its kerosene lamps burning for only 4 years."²¹

Executives from one of the international companies suggested that a distinction should be made between metals and fuels. The size of an economic ore body is smaller than the required size of an economic oil and/or natural gas deposit. They felt that sufficient metal reserves are or will become available while this may not necessarily be the case with respect to oil and natural gas.

The Canadian company believes sufficient resource endowment exists in Canada to accommodate any present or future mineral requirements.

GOVERNMENT POLICY

All of the mining companies interviewed indicated that they prefer stated regulations rather than discretionary policy. There was a strong desire to minimize uncertainty. The senior executives indicated that they were prepared to operate by whatever rules and regulations were enacted, but were concerned that discretionary powers might be exercised in an inconsistent or discriminatory manner.

21. What is Mineral Endowment and How Should We Measure It, J. Zwartendyk, Department of Energy, Mines and Resources, Information Canada, Ottawa, 1972.

V - CONCLUSIONS AND POLICY CONSIDERATIONS

During the course of this study we conducted in-depth interviews with senior executives of 5 mining corporations operating in the Province of Ontario. In addition, KPM&Co. staff interviewed:

- mining labour leaders
- executives in industries which supply machinery and equipment to the mining industry
- executives in industries which fabricate the output of the Ontario Mining Industry
- engineering consultants who supply services to the mining industry
- Federal government civil servants
- Ontario government civil servants.

The summary and policy considerations presented below are based primarily on these discussions.

THE MINING INDUSTRY

Mining is an important sector in the economy of the Province of Ontario. In 1971, mining accounted for over 32,000 jobs in the Province. In that year, Ontario mineral output was valued at \$1.56 billion and Ontario per capita mineral output was \$201. In 1971 Canadian mineral output was \$5.9 billion and Canadian per capita mineral output was \$276.

In this study we were primarily concerned with metallic minerals. The value of Ontario metallic mineral production in 1971 was \$1.31 billion. This represented 45 per cent of Canada's metallic mineral production. By far the four most important metals, for both Ontario and Canada, in 1971 were:

- nickel \$588 million in Ontario
- copper \$320 million in Ontario
- iron Ore \$142 million in Ontario
- zinc \$108 million in Ontario.

Because much of this output is exported, mining has been an important source of foreign exchange for Canada.

However, the exporting of mineral resources has received criticism in recent years because of a suggested adverse effect upon Canada's exchange rate. According to this hypothesis the exchange rate will increase when mineral products are exported and the increased exchange rate will hinder exports of labour intensive secondary manufactured commodities. We discussed this topic with a senior executive of an integrated Canadian-owned mining company.

He suggested that Canada's comparative advantage exists in the natural resource sector. While he was favourably disposed to the increased production of secondary manufactured products, this executive felt that such products would now be manufactured to a greater extent in Canada if it were profitable to do so.

There is a lack of consensus with respect to the impact of exports of mineral products on Canada's exchange rate. It would therefore be desirable that the Economic Council of Canada and/or other federal or provincial government agencies perform economic studies in an attempt to determine what impact, if any, exporting mineral products has upon Canada's ability to export secondary manufactured products.

Another point raised by analysts of the mining industry relates to the fundamental issue of ownership. As Kierans has noted:

"...one cannot nationalize what one already owns and it is clear that the province owns its own resources."²²

While it is true that resource rights belong to the province, the government may not wish at this time to assume sole responsibility for the development of its mineral resources.

Nonetheless, within the context of the present economic/social system there are a number of possible mechanisms for greater government participation in mining. A number of interviewees recommended that the Province of Ontario consider the establishment of a provincial organization that would undertake mineral exploration and development activities.

BEHAVIOURAL DIFFERENCES IN THE MINING INDUSTRY

This section summarizes the results of our analysis with

22. Report on Natural Resources Policy and Manitoba, prepared for the Government of Manitoba, E. Kierans, February, 1973, P.2.

respect to behavioural differences between the Canadian- and non-Canadian-owned mining corporations surveyed in this study.

Exploration

We were unable to determine any behavioural difference with respect to exploration. Canadian- and non-Canadian-owned firms were prepared to explore in any location. For the firms studied the percentage of exploration activity in Canada as a proportion of their world exploration expenditures had declined from 1964 to 1972.

Smelting and Refining

Both Canadian-owned companies were smelting and refining all of their output in Canada. One international firm refined the majority of its output in the country. The foreign-controlled firm refined 50 per cent while the other international firm refined none of its output in Canada.

There are historic and market forces which have been contributing factors in the development of this pattern. We have not been able to substantiate that ownership differences have been a major factor.

Fabrication/Secondary Manufacturing

Both Canadian-owned companies have integrated forward in Canada to the fabrication/secondary manufacturing stage. One of the international companies has achieved forward-integration but this does not

occur within Canada. The remaining international and foreign companies do not fabricate or manufacture.

We have concluded that, for the firms studied, Canadian ownership was a factor in the establishment of at least some portion of the fabrication facilities in Canada.

Decision-Making Process

The two Canadian and one international company are autonomous. The foreign firm is a division of the parent corporation and functions as such. The Canadian division has international responsibilities which tends to increase some of the Canadian decision making powers.

The remaining international company experienced a change in ownership from Canadian owned to international. The addition of non-Canadians to the Board of Directors (which meets six times a year) has led to some diminution in Canadian decision-making.

Labour/Community Relations

We were unable to determine any significant behavioural differences among the firms studied.

Purchase of Engineering Consulting Services

There is some behavioural difference, which appears related to ownership. This difference was most significant when the initial investment was made by a foreign-controlled company, with foreign-controlled companies tending more often to use foreign-owned engineering consulting firms.

As the company matured within the Canadian environment this behavioural difference tended to become less significant.

International Trade

None of the companies envisaged significant positive advantages from freer trade. The two Canadian-owned companies expressed some apprehension with respect to the impact of free trade on the domestic competitiveness of their fabricated and manufactured products.

Management Opportunities

There are more Canadians in senior management positions in Canadian- vis-a-vis non-Canadian-controlled corporations. This difference appears to be a function of ownership.

Financial

All of the firms were capable of obtaining sufficient capital in the Canadian financial markets to satisfy routine requirements. The principal source of routine financing for all of the companies is retained earnings. For large capital projects all of the firms have obtained funds in the New York financial market. When the foreign company established its initial facility in Canada, the majority of its funds were obtained from the parent corporation. However, when one of the Canadian-owned mining firms established a facility in the United States, it obtained the required debt financing through the United States banking system.

Pollution Control

According to provincial government officials, all of the firms in our survey were complying with government pollution requirements. However, these officials indicated that three of the four firms conducting "frontier research and development" in the pollution control field are non-Canadian-controlled. This may indicate a favourable difference in behaviour as the non-Canadian-controlled firms attempt to be good corporate citizens.

Purchase of Machinery and Equipment

One Canadian-owned firm had an explicit "buy-Canadian" policy. The other companies tended to buy Canadian to the greatest extent possible. We were unable to determine any significant behavioural difference with respect to purchasing policies.

BEHAVIOUR OF INDUSTRIES SUPPLYING THE MINING SECTOR AND INDUSTRIES FABRICATING METAL PRODUCTS

While not part of our terms of reference, KPM&Co. has examined the behaviour of firms supplying equipment to, and using the output from, the mining industry. Due to the importance of the mining sector in the Canadian economy we attempted to determine whether strong forward and backward linkages have been developed.

Machinery and Equipment Supplying Industries

We were unable to find many Canadian-owned corporations supplying

machinery and equipment to the mining industry. We interviewed a small number of subsidiary mine machinery producing companies. Based upon our discussions we found that, in a number of cases, these companies conformed to the "truncated plant model".²³ According to this model, the subsidiary does not undertake the complete range of operations normally found in an autonomous company.

For example, many of the mine machinery manufacturing firms did not perform research and development. In some cases these companies were prohibited from exporting to certain markets by the parent corporation. With respect to decision-making and management opportunities, in one of the firms interviewed the president of the Canadian company resides in the country of the parent company.

Canada has developed an indigenous geophysical equipment producing industry. Our interviews with senior executives in this industry suggest that Government survey expenditures were of considerable assistance. Neither Canadian nor foreign owned mining corporations appear to have attempted to "foster" the development of these geophysical equipment producing firms.

During our discussions with Canadian-based mine machinery and equipment producing companies, a number of those interviewed recommended that:

23. Foreign Direct Investment in Canada (The Gray Report), Information Canada, Ottawa, 1972, P. 405.

- government actively attempt to develop Canadian-owned mine machinery and equipment producing industries
- via (1) moral suasion, (2) incentives and/or (3) penalties, government should attempt to improve the performance of subsidiary mine machinery producing companies with respect to:
 - exports
 - research and development
 - increasing the Canadian content (i.e. value added) of mine equipment produced in Canada.

Fabricators

During our discussions with subsidiary fabricating companies operating in the Province of Ontario, we found export prohibitions and lack of research and development activities similar to those described above in the mine machinery producing industry. Senior executives interviewed recommended that similar positive government policies be implemented to improve export performance and to increase the degree of process research and development undertaken by non-Canadian-owned fabricating firms operating in Canada.

POTENTIAL BEHAVIOUR

In this section we discuss potential behaviour by both the mining industry and government. In addition, we present our final conclusions with respect to the impact of foreign investment in the Canadian mining industry.

Potential Behaviour:
The Mining Industry

The historical impact of the mining industry upon Canada has been well documented.²⁴ At times, industrial relations in both Canadian- and foreign-controlled mining companies have been unsettled. For example, Jamieson documents the history of the Murdochville strike of 1957 against the Gaspé Copper Mines Company, a subsidiary of the Canadian-owned Noranda Mines Limited.

"The strike against the Gaspé Copper Mines in Murdochville, Quebec, was a bitter and protracted struggle that lasted from March 10 to October, 1957. It involved 924 mining employees who had been recently organized by the United Steel Workers of America. The main issue in the strike was the company's refusal to recognize and negotiate with the union (which refusal was upheld by the Supreme Court of Quebec) and its provocative action in firing union organizers. Union spokesmen charged the provincial government with following a discriminatory policy in refusing to certify the union or to require the company to bargain, despite the overwhelming majority of the company employees that were union members. The provincial government classed the strike as illegal and provided ample police protection to the employer to recruit strike-breakers. The conflict, through much of its course but not in its ending, was broadly similar to the asbestos workers' strike of 1949."²⁵

However, the economic and social environment in Canada has progressed to the stage where corporate industrial relations have become somewhat more sensitive to public opinion. It would appear to be

24. Times of Trouble: Labour Unrest and Industrial Conflict in Canada 1900-1966, by S. Jamieson, Task Force on Labour Relations Study No. 22, Information Canada, Ottawa, 1971.

25. Op cit, Page 360-361.

reasonable to assume that concern with "corporate image" will continue to act as a moderating force on corporate behaviour.

This awareness of the social environment will also effect the economic decision-making process of foreign- as well as Canadian-controlled mining companies. For example, one of the international firms interviewed in our study indicated that they built a further processing facility in Canada even though their financial analysis indicated that a greater rate of return on investment could have been obtained if the plant was located closer to the Western European market. The senior executive interviewed suggested that the firm's corporate image in Canada was one of the principal determinants in deciding to build the facility in Canada.

However, this positive attitude does not appear to have manifested itself in the purchase of Canadian content in consulting engineering services or mine machinery and equipment industries. As noted in the report, there was no significant difference in purchasing policy based upon ownership. Potential behavioural patterns in the mining industry (both Canadian- and non-Canadian-controlled) may result in increased purchases of goods and services based, in part, upon the extent of Canadian content in these items. Our discussions with senior mining executives, in foreign- as well as Canadian-controlled firms, indicate an increased awareness for the need to develop policies of this type.

Potential Behaviour:
Government

At this time a number of Provincial governments are actively involved in the exploration and development of mineral resources.

Recently, the Canada Development Corporation (CDC) has made an offer of \$290 million in order to purchase a substantial interest in Texasgulf Inc., a multinational corporation with substantial investments in Canada.

There have been a number of studies and/or statements which have suggested alternative strategies for government to increase its share of the income generated by the mineral industry. For example, Professor Kierans in his report to the Manitoba Government suggests:

"I would, therefore, recommend to the Government of Manitoba a new resource policy... A fundamental aim of such a policy shall be the repatriation by the Crown of all existing resources leased to the private sector and that a period, not exceeding ten years, be granted as sufficient to accomplish the transfer in an orderly fashion."²⁶

On July 23, 1973 the Minister of the Federal Department of Industry, Trade and Commerce issued a press release which suggested that a system of export licenses might stimulate a greater degree of processing of Canada's minerals before they are exported. However, analysis would have to be conducted to determine present and potential world demand and to ensure that foreign purchasers would be prepared to pay higher prices for minerals with a higher degree of processing.

The current cyclical expansion may not be indicative of long term mineral shortages. This may be particularly true with respect to such minerals as nickel, copper and sulphur. The imposition of further processing requirements may place the Canadian mining industry in a position where its ability to compete in international markets may be eroded. In addition, as Dr. Cordell has noted:

26. E. Kierans, Report on Natural Resources Policy in Manitoba, prepared for the Government of Manitoba, February, 1973.

"If Canada wishes to pursue a policy of encouraging or enforcing more domestic mineral processing, then the greatest scope obviously lies in the area of manufacturing. Success in such a policy would require negotiation with consuming countries to have trade barriers removed or reduced. Otherwise, Canadian manufactured items will continue to be uncompetitive in such markets.

It should be emphasized that removal of the trade barriers may turn out to be a necessary but not sufficient condition for achievement of more value added in Canada. The existence of vertically integrated firms that have made substantial capital investments according to a particular structural configuration may militate against significant structural changes in the short-term. Consequently, gaining accessibility by favourably altering the tariff barriers may not prove to be a significant enough stimulus to radically alter the traditional behaviour of vertically integrated firms who have shipped unprocessed resources out of Canada for such a long time.

Canada undoubtedly does have some bargaining powers in this respect in that it is a major world supplier of raw materials which other industrial countries require. However, such bargaining power is limited to the extent that supplies of such resources are available in other countries that do not object to their export in unmanufactured forms.

Additional value added in Canada must be tied to the entire question of an industrial strategy. Which resources and therefore which manufacturing industries should be supported? Considerations of market conditions for the final product worldwide will have to be weighed against availability of the resource in Canada vis-a-vis other countries."²⁷

27. A. Cordell, Resources: Implications of Ownership, Science Council of Canada Special Study No. 27 (Essays on Aspects of Resource Policy), May, 1973, Information Canada, Ottawa.

POLICY CONSIDERATIONS

In this section, we discuss the policy issues which evolved from our interviews with the mining industry.

Export of Mineral Resources

Senior executives in the mining industry believed that Canadian export of mineral resources is not a deterrent to Canadian exports of secondary manufactured products. We were unable to resolve this question in factual terms and note the lack of detailed economic studies to determine the impact of exporting mineral products on the ability of Canada to export secondary manufactured products.

Direct Government Mineral Development

A number of labour, government and mining executives recommended that the provincial government consider the establishment of a government agency to engage in mineral exploration and development activity. With the exception of the foreign-controlled mining company, this concept would appear to be acceptable to the mining firms in this study. The mining companies expressed the opinion that the provincial agency must be prepared to assume the same risks as private firms assume. Thus, in a joint venture with private mining companies, the provincial agency would be expected to provide risk capital equal to its share of the venture.

Direct government involvement in mining could provide the province with a greater return on its mineral resources within the con-

cept of Ontario's existing socio-economic system. A provincial agency could also help to stabilize the level of exploration activity in the province. In addition, if an economic ore body is discovered by the provincial agency, the agency could specify that the mine machinery and equipment purchased contained the maximum amount of Canadian content feasible.

Screening Agency

We discussed with executives in the mining sector their views with respect to the screening of take-overs of Canadian-owned corporations. Mining executives indicated some agreement with the screening concept. They expressed the opinion that the take-over of profitable Canadian-owned firms should be examined to ensure that a net social gain will accrue to Canada if the corporation is taken over. Nonetheless, the firms expressed concern that the proposed federal screening agency would operate under guidelines rather than fixed regulations. The mining executives interviewed generally expressed a preference for definite regulations rather than governmental discretion.

Canadian Content in the Mine Machinery Industry

A number of interviewees expressed the opinion that government should attempt to:

- foster the further development of a Canadian-owned mine machinery producing industry
- improve the performance of foreign-controlled subsidiaries with respect to (1) exports, (2) research and development, and (3) Canadian value added.

The view was expressed that improving the performance of foreign-owned mine machinery producing subsidiaries would also have a positive impact with respect to both output and employment. This would occur through an increase in export activity, greater research and development undertaken in Canada, and an increase in Canadian value added. Value added would be increased by performing more manufacturing in Canada rather than the assembly of components produced abroad.

Senior executives believed that, wherever possible, moral suasion and incentives should be utilized as policy tools rather than penalties.

The development of an indigenous mine machinery producing industry could be assisted, for example, through the purchasing policies of a provincial mining company. Also, the provision of equity and/or working capital could provide venture funding for one or more new Canadian-owned companies. If, in addition, tariff were applied automatically to machinery presently imported duty-free (under the tariff item of a class or kind not presently produced in Canada), the new Canadian firm(s) would have an added opportunity to become competitive.

Another possible policy alternative would be to provide for depreciation in excess of 100 per cent for mine machinery with higher Canadian content. For example, mine machinery completely produced in Canada (including components) could receive, say, 150 per cent depreciation. While conceptually feasible, such a policy might be difficult to implement in practice.

Moral suasion could be utilized to attempt to secure greater production in Canada. Increasing tariff rates on components imported into Canada, while effective, would be difficult to implement under present international trends toward freer trade. However, many countries have developed an array of "non-tariff barriers" in an attempt to aid domestic manufacturers. The threat of non-tariff barriers on currently imported components could be utilized as a form of moral suasion to attempt to have subsidiaries perform more manufacturing in Canada.

Canadian Content in the
Metal Fabricating Industry

Exhibit 14 in Section III indicated that while Canada has a substantial trade surplus in concentrates and primary refined forms, there are large trade deficits in a number of fabricated forms. In addition, the behaviour of the sample of subsidiary firms surveyed indicated a degree of truncation in the extent of their operations. For example, exports were restricted to certain geographic areas and the level of process research was significantly below what would be expected in an autonomous organization.

The Federal Government has developed a set of criteria, called the "Winter Guidelines", that outlines some of the corporate policies that should be followed by foreign-controlled firms in order for them to be good corporate citizens. These guidelines are:

- "1. Pursuit of sound growth and full realization of the company's productive potential thereby sharing the national objective of full and effective use of the nation's resources.
2. Realization of maximum competitiveness through the most effective use of the company's own resources, recognizing the desirability of progressively achieving appropriate specialization of productive operations within the internationally affiliated group of companies.
3. Maximum development of market opportunities in other countries as well as in Canada.
4. Where applicable, to extend processing of natural resource products to the extent practicable on an economic basis.
5. Pursuit of a pricing policy designed to assure a fair and reasonable return to the company and to Canada for all goods and services sold abroad, including sales to the parent company and other foreign affiliates.
6. In matters of procurement, to research out and develop economic sources of supply in Canada.
7. To develop as an integral part of the Canadian operation wherever practicable, the technological, research and design capability necessary to enable the company to pursue appropriate product development programs so as to take full advantage of market opportunities domestically and abroad.
8. Retention of a sufficient share of earnings to give appropriate financial support to the growth requirements of the Canadian operation, having in mind a fair return to shareholders on capital invested.
9. To work toward a Canadian outlook within management, through purposeful training programs, promotion of qualified Canadian personnel and inclusion of a major proportion of Canadian citizens on its Board of Directors.
10. To have the objective of a financial structure which provides opportunity for equity participation in the Canadian enterprise by the Canadian public.

11. Periodically to publish information on the financial position and operations of the company.
12. To give appropriate attention and support to recognized national objectives and established government programs designed to further Canada's economic development and to encourage and support Canadian institutions directed toward the intellectual, social and cultural advancement of the community."²⁸

A number of senior executives interviewed suggested that enforcement of the Winters Guidelines through legislation and/or moral suasion could reduce some of the undesirable effects of truncated subsidiaries operating in the Canadian metal fabricating industry.

As another policy option, the Province of Ontario as owner of the mineral resources could grant production licences based upon performance criteria. One possible criterion could require that a specific percentage of the refined metal must be fabricated within Canada. Programs of this nature can be more effectively implemented within the context of well defined resource management policies. Resource management policies require overall development objectives and strategies for policy implementation. While it may be premature to apply such policies at this time, the Province should undertake research to estimate the economic impact of such programs upon firms engaged in the mining of Ontario's minerals.

28. Foreign-owned Subsidiaries in Canada, 1964-1967, Department of Industry, Trade and Commerce, Information Canada, Ottawa, 1970, P. 54 and 55.

Further Processing

Senior mining company executives believed that judgment should be exercised in the enforcement of further processing legislation. This raises the fundamental issue as to the potential trade-off with respect to value added and employment opportunities vis-a-vis the mining of all economic ore bodies. The economics of an ore body are altered when legislation affecting the cost of mining the ore body is enacted. Thus, stringent requirements as to the extent of further processing required can affect the timing and extent to which it is profitable to mine a given body. It then becomes a matter of public policy as to whether government is prepared to possibly postpone the development of an ore body due to further processing requirements.

For example, in 1974 Ontario steel companies will import additional iron ore from the United States. Sufficient iron ore reserves exist in Northern Ontario, but Canadian demand for iron ore is not sufficient to warrant development of an economic size Northern Ontario iron ore mine at this time. It might be possible to develop an economic mine if the annual excess production is permitted to be exported. However, under Section 113 of the Ontario Mining Act a Cabinet Exemption to export ore in unprocessed form is usually of limited duration. Therefore, it is unlikely that a foreign- or Canadian-controlled steel company would be prepared to undertake a long-term commitment and/or investment in Northern Ontario iron ore given the present degree of uncertainty.

This example raises a number of policy implications. At the present time the Canadian steel industry imports a large amount of coking coal from the United States. If, in addition, the Ontario steel industry became dependent upon United States iron ore, the industry and the country might find itself in difficulty (perhaps short-term) if the United States were to institute export controls on coking coal and iron ore.

If the Northern Ontario iron ore deposits were developed and part of the output exported then foreign exchange would be earned. However, as discussed earlier, this export of iron ore may raise the value of the Canadian exchange rate, thereby making more difficult the export of manufactured products.

If the deposits were to be developed now, jobs would be created. On the other hand, the resource may be more valuable in the future and the job creating potential of the ore body may be much larger in the future (or it may be less).

Development of the ore body would also affect the economic and social viability of a number of Northern Ontario communities. Therefore, it would also be necessary to evaluate these factors in addition to those discussed above.

This brief discussion illustrates the complexities of the policy issues confronting governments and the difficulties in determining the "correct" course of action.

Secondary
Manufacturing

A study on Canadian manufacturing prepared for the Economic Council of Canada noted:

"...a number of firms mentioned that prices of products based on Canadian natural resources are sometimes higher to Canadian purchasers than to U.S. buyers, even for similar quantities."²⁹

We have not been able to pursue this matter in detail; however, it appears that (for a variety of reasons) these price differentials continue to occur at various times. Detailed analysis would be required to determine the factors responsible for these differentials and the possible policy tools that could be developed to ameliorate this situation.

Assistance to Small
Prospectors and Mineral Developers

There was general agreement amongst the mining company executives that small prospectors and developers will be placed in a less advantageous position as a result of the recently enacted Federal Tax Legislation. Some of the reasons advanced for this decline in incentive to small miners and prospectors are:

29. Scale and Specialization in Canadian Manufacturing, D. Daly, B. Keys and E. Spence, Economic Council of Canada, Staff Study No. 21, 1968.

- the impact of capital gains taxes if the mine is sold
- the requirement that depletion allowances be earned by means of further exploration activity.

Mining company executives expressed the opinion that, if government policy is to encourage the mining industry, additional incentives are required to assist small miners/prospectors. Executives of the larger mining companies indicated that small developers have been successful in finding new mines, whereas many of the large firms have not been as successful. Some of the larger mining companies are more concerned with proving new reserves around their existing ore bodies and, in the past, have purchased new mines discovered by smaller prospectors.

The Economic Extent of an Ore Body

In Exhibit 15, Section IV, we indicated the impact of altering various taxes upon the economic viability of a group of mines. Similarly, all costs (including taxes) affect the economics of a given ore body and determine the grade of ore that will be mined. Thus, higher costs result in the mining of higher grades of ore.

During the course of our interviews, a number of labour leaders and government officials expressed concern with respect to the mining of only the higher grades of ore in an ore body. It may be difficult to return to the ore body at a later time to mine the lower grades of ore. This practice could result in a net social loss although the economics of mining only the higher grade is a rational economic decision, at the time.

However, it is questionable that this practice is widespread. Mining forms an integral part of many major industrial complexes. Thus, when a steel company commits itself to securing a stable source of supply for, say, a 20-year time frame, it is uncertain that the company would mine only the higher grades, abandon the mine, and begin to high-grade at another location. The cost of the initial capital expenditure (at times including schools, roads, hospitals, etc.) would tend to preclude high grading on a sustained basis.

Nonetheless, a company may be confronted with the decision to mine lower grades of ore in an operating mine or abandon the mine and develop at a new location. Other than expropriation and government operation of the facility, the alternative government option appears to be to provide incentives to continue to mine an uneconomic ore body. It would be difficult, however, to justify granting such incentives to the large, profitable, mining firms which currently operate within the Province of Ontario.

Use of Canadian Consulting Engineers

Interviews with mining and Canadian consulting engineer executives indicate that a number of mining consulting contracts have been placed with foreign consulting engineering firms. In some cases, the majority of the work has been performed abroad with the resultant loss of potential Canadian engineering job opportunities.

Two recommendations emerged from discussions with the executives interviewed. Firstly, it was suggested that some type of review mechanism

be developed where it must be shown that projects (of a specified size or larger) require the use of foreign consulting engineers. This would place responsibility on the mining company to ensure that Canadian expertise is not available prior to awarding a contract to a foreign firm. A policy of this type would still permit the efficient utilization of foreign expertise when it can be demonstrated that the required capability is not available in Canada.

The second recommendation suggests that if foreign expertise is required, then this capability should be retained only to the extent required. Thus, if the required foreign input on a project is, say, two per cent, then foreign expertise should be utilized only to that extent. The remaining 98 per cent of the work that can competently be done in Canada should be performed in this country. This permits the use of necessary foreign capability but maximizes the Canadian content to the greatest extent feasible.

Policies to Stabilize Output and Employment

There was a dichotomy of opinion with respect to the efficacy of instituting government policy to stabilize output and employment in the mining industry. Labour and government leaders believed that such policies were required, whereas mining executives were generally opposed.

One possible policy tool to stabilize output/employment in mining would be the provision of loans on the accumulation of stock-piles. Mining executives believed that the industry should be permit-

ted to respond to business cycle conditions by undertaking structural changes within their firms and, therefore, did not respond favourably to this policy proposal.

Our interviews indicate that additional research should be undertaken in the area of defining policy tools to stabilize output and employment in the mining industry.

Concessional Financing

Concessional financing has been defined as the loaning of governing funds for a project on the provision that a commitment is made to purchase machinery and equipment from the jurisdiction of the government providing the loan funds. This technique has been adopted by a number of countries in an effort to provide additional markets for the goods and services of the country.

A number of interviewees suggested that Canada should become more actively involved in concessional financing as a method for selling greater amounts of mine machinery and equipment abroad. In addition, this concept could be used within Canada by the Ontario and/or Federal Government when it provides financing to, say, the developing Atlantic Region, with the provision that the machinery, equipment and services be purchased from sources within the Province of Ontario and/or Canada.

Techniques such as this could assist in the further development of Canadian sources of financing and also assure increased Canadian content in a number of major projects, both within the country and abroad.

Foreign Capital in the
Mining Industry

Canada has experienced large capital inflows in the exploration and development of its mineral resources.

Conventional wisdom suggests the mining industry in Canada would not have grown to its present size without infusion of foreign capital. Our study has neither confirmed nor disproven this hypothesis.

For many years the policy of the federal and most provincial governments was to actively encourage foreign (as well as domestic) companies to invest in Canadian mining. This policy was implemented through such mechanisms as a favourable tax structure and the provision of infrastructure (i.e., roads, housing, schools, hospitals, etc.). In retrospect one might suggest that these incentives were overly generous. In recent years governments have begun to increase the burden of taxation on the mining industry and have been less prepared to undertake major infrastructure investments at potential mineral sites.³⁰

As Canada's economy has matured during the past 50 years, the requirements for foreign capital to develop the country's mineral potential have lessened. However, this does not necessarily imply that future foreign investment in Canada's mining industry would be undesirable. For example, foreign investment in mining would permit domestic funds to be utilized in other sectors. These alternative uses can be social, for example dental care, as well as investment

30. The Province of Ontario appears to have an implicit policy of not encouraging the development of new resource towns.

in other industrial sectors.

The Allocation and Use of Canada's
Non-Renewable Resources

The allocation and use of Canada's non-renewable resources has increasingly become a subject of debate. The following list provides a partial enumeration of some of the positions in this debate:

- minerals should be subjected to further processing before they are exported
- Minerals should be left in the ground until some future time when they will presumably be worth much more than they are today
- Canada should de-emphasize the production of minerals and concentrate upon producing secondary manufactured products
- Canada should buy back foreign mining companies
- Canada should nationalize foreign mining companies and operate the facilities through government corporations
- Canada should nationalize domestic, as well as foreign, mining companies and operate the facilities through government corporations.

The list is not exhaustive nor are the items mentioned mutually exclusive.

Our study of the Ontario mining industry indicates that behavioural differences do exist between foreign- and Canadian-controlled mining companies. With respect to such factors as the purchase of goods and services and the extent of fabrication in Canada, it is possible to legislate and/or apply moral suasion in

order to bring about desirable behaviour patterns.

However, the extent of the behavioural differences, in themselves, do not appear to warrant the more extreme positions (such as the nationalization of foreign firms) that have been proposed in the debate on the allocation and use of Canada's non-renewable resources. Nonetheless, there appear to be valid reasons for government activity in the mining industry. A principal reason is the fact that mineral resources are non-renewable and that private sector decisions as to the timing of the development of these resources may not correspond to the government's perception of the socially desirable time horizon for the development of these resources.

In addition, as highlighted in our small town and employees surveys, the private development of natural resources appears to generate a more emotional response than, say, the private manufacture of an automobile.

The fact that governments have a role to play in the development of Ontario's natural resources was not questioned by any of the executives interviewed in this study. Rather the question has become, how active a role should governments assume?

Discussions with senior mining executives (irrespective of ownership) indicate that the companies are generally prepared to undertake joint exploration and development ventures with government, provided the government is prepared to assume its share of the risk. Joint ventures of this type might somewhat reduce the emotional aspects

of private resource development. In addition, the participation of private companies should assist in maintaining efficiency in the joint venture management and production processes.

APPENDIX A

MINING INDUSTRY DISCUSSION PAPER

MINING INDUSTRY DISCUSSION PAPER

The attached list of questions is intended to provide the basis for a confidential discussion regarding behavioural differences, if any, between Canadian- and non-Canadian-controlled mining companies.

The paper has been divided into two sections composed of

- factual questions (Section I)
- questions requiring opinion and judgment (Section II).

We anticipate that the factual questions can be answered in writing from routine company records. The questions relating to opinion are intended for discussion in meetings between the company and representatives of Kates, Peat, Marwick & Co.

The company might also be willing to prepare written answers to some or all of the "opinion" questions either in advance of, or subsequent to, the interview process, and we would appreciate such co-operation.

SECTION I - FACTUAL QUESTIONSA. MINING

1. What was the value last year of ores (in unprocessed form) from each of your mines (specify, including foreign locations); the value over the last ten years.
2. What has been your employment at each of the above mines for each of the last ten years.
3. What have been your exploration expenditures in (1) Ontario, (2) Canada and (3) Other (specify locations of major expenditures) over each of the past ten years.
4. How is your market distributed within Canada and abroad for ores and concentrates. How has this pattern changed over the past ten years.
5. For the following factors, are costs lower or higher (and by how much) in Ontario vis-a-vis other provinces and foreign countries (specify):
 - raw materials and supplies (specify)
 - taxes (Federal, Provincial, Municipal)
 - interest
 - wages and salaries
 - machinery and equipment (specify)
 - fuel and power
 - management salaries
 - transportation
 - distribution
 - marketing and advertising
 - construction costs
 - land

If different, please explain why. How has this pattern altered over the past ten years.

6. What percentage of sales of ores and concentrates are for export. Do you export to parent or to other subsidiaries. Is this done on a competitive basis. What was this percentage five, ten years ago.
7. What is the dollar value of your ore and concentrate inventory. Where is it stockpiled. What was the dollar value five, ten years ago and where was it stockpiled at those times.
8. Has the composition of employees engaged in mining changed over the past five, ten years (e.g.: more skilled workers). Specify.

B. SMEETING AND REFINING*

1. How much Ontario origin concentrate was smelted and refined in Ontario, in the remainder of Canada, abroad.

How much Canadian origin concentrate (exclusive of Ontario) was smelted in Ontario.

How much non-Canadian origin concentrate was smelted and refined in Ontario, in Canada.

Data for each of the past ten years; specify by locations including foreign locations.

- (a) Has this pattern changed over the past ten, twenty years.
 - (b) What is the cause for this pattern (e.g.: nearness to market, transportation costs, tariffs, etc.).
2. What has been your smelting and refining employment over the last ten years. Has the composition (e.g.: skill level) of the work force changed over this time period and why.

* For each of the principal ores mined by your Company in Ontario.

3. How is your market distributed within Canada and abroad for smelted and refined products. Has this pattern changed over the past ten years, why.
4. What percentage of smelted and refined products are for export. Do you export to parent or to other subsidiaries. Is this done on a competitive basis. What was this percentage five, ten years ago.
5. What is the dollar value of your smelted and refined product inventory. Where is it stockpiled. What was the dollar value five, ten years ago and where was it stockpiled at those times.

C. R & D AND PRODUCTION
ENGINEERING

1. What have been your annual expenditures for research and development (R + D) and for engineering services (engineering design of both products and production facilities) for each of the past ten years. For each of these years please specify:
 - (a) The percentage of these expenditures on work contracted out to firms controlled in Ontario, rest of Canada, abroad.
 - (b) The percentage of these expenditures on in-house R + D and engineering in Ontario, rest of Canada, abroad.

D. SECONDARY MANUFACTURING

1. How much of your refined metal is further processed, into secondary manufacturing products, by your company.
 - (a) What has been the dollar value for each of the last ten years.
 - (b) Specify by location of manufacturing.

2. How much of your refined metal is sold to non-related companies.

(a) What has this dollar value been for each of the last ten years.

(b) Where are the locations of these companies.

(c) What principal products do they produce; where are these products sold.

E. DECISION-MAKING

1. What percentage of your junior, middle, senior management are Canadian citizens. How has this pattern changed over the past five, ten years.

(a) What is the citizenship of your top five corporate officers in Canada.

2. What proportion of your voting stock is owned by non-Canadian citizens.

3. Of last year's capital requirements what percentage was obtained from:

- Parent	%
- Other subsidiaries	%
- Stock sold in Canada	%
- U.S. Banks	%
- Canadian Banks	%
- Retained earnings	%
- Other (specify if major)	%
	<hr/> 100 %

4. Is the Board of Directors active in short-term policy making (e.g.: quarterly production and sales targets).

(a) Does the Board have specific committee concerned with specific functions (e.g.: Finance, Marketing). If so, how often do these committees meet.

- (b) How often does the Board meet. Where do they meet.
- (c) How many people are on the Board. How many are Canadian citizens, land immigrants or former citizens. What is the nationality of the other Board members.
- (d) How much are Board members paid.
- (e) Are "outsiders" on the Board (e.g.: general public) What is their nationality.
- (f) Is the Chief Operating Officer of the Canadian company a member of the Board.

F. POLLUTION ABATEMENT

- 1. What percentage of capital expenditures in (1) Ontario, (2) Rest of Canada, (3) Other (specify) have been for pollution control equipment. What was this percentage for each of the past ten years.

G. LABOUR RELATIONS

- 1. How many man-days have been lost due to strike action in each of the past 15 years. Specify by location, type of facility (e.g.: copper mine, zinc mine) and union affiliation of the workers.

H. FINANCIAL

- 1. What percentage of net profits left Canada in the form of a flow of dividends, royalties, etc. to the parent.
- 2. How does your ratio of debt to equity compare with (a) parent, (b) other subsidiaries, and (c) similar firms in your industry.

I. PURCHASE OF ENGINEERING
SERVICES AND ADVERTISING

1. (a) What was the total amount you spent on engineering consultants last year, five years ago? How much did you pay each engineering firm?
 - (b) Which engineering firms were Canadian? Which firms that were not Canadian worked out of Canadian offices when employed by your company? Which firms were also used by your head office (if outside Canada) or by your foreign affiliates?
 - (c) What were the skills required for the project for which the engineering firms were hired? Of the foreign firms hired, was a check made to determine whether Canadian firms had the required skills?
 - (d) In what cases was the hiring of an engineering firm made necessary by its holding of exclusive patents?
-
2. (a) What was your total advertising budget in Canada last year, five years ago? What percentage of the advertisements and commercials were produced primarily for outside Canada?
 - (b) If your head office is located outside Canada, what is your authority with respect to
 - overall marketing strategy
 - advertising decisions
 - the setting of marketing spending levels
 - the advertising agency to be employed.

SECTION II - ANALYTICAL QUESTIONSA. OUTPUT AND EMPLOYMENT

1. Do you plan increased (decreased) exploration expenditures in (1) Ontario (2) Rest of Canada (3) Other (specify) over the next five, ten years. Specify the reasons for these plans, by geographic area.
2. Do you project increased output of ores in (1) Ontario (2) Rest of Canada (3) Other over the next five, ten years; why. Specify by type of ore
 - (a) Which area will experience the greatest absolute growth; which is the greatest relative (i.e.: percentage) growth.
 - (b) What will be the impact on employment in these areas.
3. Do you plan for increased smelting and refining in (1) Ontario, (2) Rest of Canada, (3) Other over the next five, ten years; why. Specify by type of ore.
 - (a) Which area will experience the greatest absolute growth; which area the greatest relative growth.
 - (b) What will be the impact on employment in these areas.
4. Do you plan for increased fabrication (i.e.: secondary manufacturing) of your refined metals in (1) Ontario (2) Rest of Canada (3) Other over the next five, ten years.
 - (a) Why.
 - (b) What products will be fabricated.
 - (c) Will the fabricating be performed by your company.
 - (d) Where do you anticipate the manufactured products will be sold.

B. FREE TRADE

1. Would this increase or decrease Canadian
 - exploration
 - mining
 - smelting

- refining
- further fabrication

Why.

2. Would free trade be advantageous for your company, why.

- (a) What would be the impact on employment; would the skill composition of your labour force change.

C. EXPORTS AND
IMPORTS

1. What is your greatest barrier to export:

- (a) tariffs
- (b) transportation costs
- (c) price competition: explain why foreign prices are lower
- (d) parent policies prohibiting exports
- (e) non-tariff barriers, such as performance criteria.

Please explain.

- 2. Would greater exports affect the stability of your company's operations, by the need to rely upon foreign markets.
- 3. Are you familiar with and/or make use of government agencies such as the Export Development Corporation.
- 4. What additional action could government take in these areas to aid your export operations.
- 5. What percentage of your exports are to parent or other subsidiary companies. Are these sales based upon competitive bids.
- 6. Do you think being a subsidiary is an advantage or disadvantage in the export market.

7. What is the impact of Canadian tariff and non-tariff barriers on your imports of materials and/or machinery and equipment. What would be the effect if these barriers were raised: removed.
8. How has the volume and pattern of your imports changed over the past five, ten years.

D. MANAGEMENT
OPPORTUNITIES

1. How many Canadian management people have left Canada for employment with the parent or other subsidiary over the past five, ten years. Have they given up their citizenship. Do you anticipate their return to Canada in more senior positions with your, or another firm. What percentage do you anticipate will return.
2. Do you have a hire Canadian policy. Does it apply to all levels within the organization. Has it proven successful. What could the government do to make it more successful.
3. Have there been many instances of "spin-off" where company executives have gone out and formed their own organizations (please specify).

E. DECISION-MAKING
PROCESS

1. What dollar value of capital expenditure can be made without recourse to parent approval.
2. Do you have a sales marketing program. Does it require head office approval.
3. Do you require parent approval when hiring senior staff.
4. Does one man in Canada (specify, for example, the Canadian President) formally report to one (or more) person(s) at head office. Or is there a multiple reporting system (e.g. Canadian V.P. Finance to Head Office counterpart, etc.).
5. Do you have a market research and/or long range planning department. Is it coordinated with parent. What are its responsibilities.

6. Has there been an increase or decrease in the degree and extent of Canadian decision-making over the past five, ten years. Please specify.
7. Are any of the following functions coordinated on a North American or World-Wide basis:
 - production
 - distribution (a) exports
(b) imports
 - capital expenditures
 - labour relations
 - R + D
 - staff support, for example, market research, operations research.
8. Could you diversify into other fields without parent approval.
9. Could you purchase a Canadian subsidiary in (a) a related, (b) a new field without Head Office approval.
 - could you do (a) and/or (b) abroad
 - if so, how might this be financed.
10. Do you pay fees for management services provided by the parent company.
11. Can you borrow without Head Office approval. Is there a maximum. Do you have choice as to source of funds.
12. Can you engage in pure and/or applied research and development without Head Office approval. Is there a budget limit beyond which approval is required.
13. Is the Board of Directors active in short-term policy making (e.g.: quarterly production and sales targets).
 - (a) Does the Board have specific committees concerned with specific functions (e.g.: Finance, Marketing). If so, how often do these committees meet.

- (b) How often does the Board meet. Where do they meet.
- (c) How many people are on the Board. How many are Canadian citizens, landed immigrants or former citizens. What is the nationality of the other Board members.
- (d) How much are Board members paid.
- (e) Are "outsiders" on the Board (e.g.: general public). What is their nationality.
- (f) Is the Chief Operating Officer of the Canadian company a member of the Board.

F. R + D; ENGINEERING
AND TECHNICAL SERVICES

1. What products or processes have been researched and developed in Canada.
 - (a) Have they been marketed successfully.
 - (b) Was the engineering done in Canada.
 - (c) What percentage has gone to export.
 - (d) Is the product now being produced by parent or subsidiary.
 - (e) If so, was the technology purchased at market prices; are royalties being paid to the Canadian company.
2. Is it difficult to obtain satisfactory engineering services in Canada. If so, why.
3. If you have a foreign parent do you draw upon them or engineering firms which they initially retain, for a significant proportion of your engineering services.
4. When using parent design specifications do you modify them to accommodate Canadian suppliers. Please give examples.
 - (a) If not, what could the government do to be of service in this regard.
5. Has your research and development effort expanded or contracted over the past ten, five years.

6. Is it more applied, or pure or has the mix remained the same (please define pure research as it applies to your company's activity).
7. Does the size of the Canadian market inhibit your research program. Would an integrated North American market lead to increased R + D and engineering services in Canada. Would there be more jobs in Canada for Canadian scientists and engineers.
8. Do you have a hire Canadian policy when hiring R + D and engineering personnel. What could the government do to aid this program.
9. Please provide examples of products developed by parent and/or other subsidiaries that have been adapted by your firm to the Canadian market. What types of Canadian inputs has this adaptation process required, for example, in terms of Canadian engineering services required.
 - (a) How could government aid in expanding the adaptation process.
10. What percentage of your production is in products that you were not making ten years ago. How many of these were researched, developed, engineered and marketed initially in Canada (i.e. introduced in Canada first).

G. FINANCIAL

1. Does your relationship with parent and other subsidiaries permit lower holdings of inventory than the normal industry ratio.
2. To qualify for some government grants and subsidies it is necessary to agree to certain performance criteria. Is Head Office approval required before you can make an application for such a grant or subsidy.
3. If Canada instituted exchange restrictions (such as prohibiting the inflow of foreign capital), would you be capable of financing your operations. What sources of funding would you use.

4. If funds are borrowed from parent or other subsidiary is the market rate of interest charged.
5. Do you do bulk purchasing with parent and/or other subsidiary. If so, how is the sourcing done.
 - (a) If purchases are made abroad how are materials tailored to Canadian requirements.
6. If management has stock option bonuses are they in parent stock, Canadian stock or both. Does the executive have a choice.

H. POLICY

1. What have been the implications of recent Federal and Provincial taxation legislation. Specify in detail with respect to unit cost before and after the legislation and in relationship to other provinces and countries.
2. What are the cost implications of Federal and Provincial pollution controls. Specify with respect to unit cost and compare with other provinces and countries.
3. Compare Ontario requirements for smelting and refining with other provinces and other countries.
4. If Ontario were to require 100 per cent refining within Canada within the next five, ten years what would be the effect upon your company's operation.
 - (a) What action could government take in order to assist you to meet this goal (e.g.: aid in securing long-term foreign contracts).
5. What could the Ontario Government do to increase exploration in the Province.
 - (a) How would this compare with what is done in other provinces and countries.

6. Could a government agency, such as the Wheat Board, be of assistance to your company during periods of economic stress.
 - (a) If so, in what ways. Is this done in other countries.
 - (b) If not, why.
7. What policies could the government initiate to reduce cyclical swings in employment.
 - (a) Have policies of this type been introduced in other countries and have they been successful.
8. What would be the impact on unit costs if restrictions were placed upon the importation of foreign materials and/or machinery and equipment.
 - (a) What could government do to assist you during the transition phase to purchasing from Canadian suppliers.
9. What policies could government implement to further the degree of secondary manufacturing in Ontario and/or Canada, that is based upon mineral resources.
10. What actions could government take, that are not now being done, to systematically introduce pollution control standards.
11. In Canada we have the Industry, Trade and Commerce "Winters Guidelines" for corporate behaviour. Have you had experience with similar guidelines in other countries, and how do these guidelines compare with the Canadian policies.

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